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USS *NARCISSUS*: THE ROLE OF THE TUGBOAT  
IN THE AMERICAN CIVIL WAR

by

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B.A., University of Florida, 2005

A thesis submitted to the Department of Anthropology  
College of Arts and Sciences  
The University of West Florida  
In partial fulfillment of the requirements for the degree of  
Masters of Arts  
2011

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## ACKNOWLEDGEMENTS

The successful completion of this thesis is the direct result of the input, participation, and assistance of numerous institutions, volunteers, and most importantly, my friends and family. First and foremost, to John W. Morris III who provided me with an internship as an undergraduate and encouraged me to go to graduate school and "keep my chin up" along the way. It was his invitation to be a part of the Tampa Bay Historical Shipwreck Project in 2006 that enabled me to participate in the fieldwork required for the completion of this thesis. Thanks to the United States Navy and Dr. Robert Neyland for allowing me to write my thesis about USS *Narcissus*. To my committee members: Greg Cook, who listened for hours as I expressed frustration and excitement about possible theoretical positions and always provided insight and inspiration; Dr. Della Scott-Ireton, who always welcomed my emails and visits with open arms, whose editing skills were invaluable, and who always found time to buy my "friend" a drink; Dr. John Bratten, thank you for your encouragement and support.

The fieldwork conducted on *Narcissus* and the resulting archaeological information would not have not been possible without the assistance of a number of institutions. Thanks to the Florida Division of Historical Resources for assisting with the funding of this project. To The Florida Aquarium staff and volunteers thanks for your hard work and dedication. Special thanks goes to Casey Coy and Mike Terrell who managed all of the fieldwork dive operations, but more importantly, acted as interpreters

between archaeologists, biologists, and volunteers. Your continued support, humor, and encouragement were invaluable. Thanks also to Dr. Gordon P. Watts and Tidewater Atlantic Research, Inc. for your expertise, insight, and humor. To The Scripps Research Institute and John Kloske for volunteering time to conduct remote sensing on the site and catch a glimpse of the elusive goliath grouper. My historical research would have been amiss without the help of Danny Redmond. Danny's distant relative was a fireman who died when USS *Narcissus* was lost. His determination to learn about his family history and uncover the story of *Narcissus* enabled us to become friends and share information throughout my thesis writing process. Thank you, Danny. Thanks also to Howard B. Tower Jr. who shared his personal files with me. Without his assistance, much of the information about the salvage that occurred on *Narcissus* would have fallen off the pages of history.

The completion of this thesis would not have been possible without the untiring support of my friends and family. To Granny and Horace, who provided a house of refuge with hot, homemade meals and a couple extra bucks for a poor, drained, graduate student. To Mom, who always providing a shoulder to cry on and support despite my crazy desire to dive in strange places. To Dad and Miriam, thanks for always lending your ears and providing advice even when I did not want to hear it. Dad, it was your interest in history that influenced my passion and ultimately led me down this path. To Lisa, whose friendship and expertise in finding stumbling-distance watering holes and surprising me with special chocolate treats when I needed them most. You made my research time enjoyable and memorable. Thanks to Larry for taking time away from

Sarah and little Liam to help me with my final edits. My weightiest debt, however, is owed to the man who kept me together body and soul. My husband Billy listened to all my woes and frustrations with love and understanding. He kept the faith when I did not. Most importantly, he read my chapters and told me they were perfect, and then handed me proofed copies highlighting all their flaws. I could not have done this without him, or as well.

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## ABSTRACT

### USS *NARCISSUS*: THE ROLE OF THE TUGBOAT IN THE AMERICAN CIVIL WAR

Melissa Nicole Tumbleson Morris

This historical and archaeological study of USS *Narcissus* assesses how political and economic pressures experienced by the United States Navy during the American Civil War directly affected the Union's naval strategy and thus the decision to purchase specific types of vessels for use in the blockade. The results of this analysis validate the theory that the functional design and economic value of the screw-propelled tugboat led to the purposeful purchase of these vessels to serve as shallow-water blockade vessels and support craft. The archaeological investigation allowed archaeologists to identify this tugboat as the USS *Narcissus*. Specific measurements of the engine and hull remains allowed researchers to conclude that this type of vessel had an economical propulsion system and shallow draft that would have been best suited for a blockade ship in shallow water. Finally, an analysis of the historical and archaeological evidence enabled the author to suggest possible explanations for the catastrophic explosion that led to the demise of USS *Narcissus*.

## INTRODUCTION

This historical and archaeological study of USS *Narcissus* will assess how political and economic pressures experienced by the United States Navy (USN) during the American Civil War (ACW) directly affected the Union's naval strategy and thus the decision to purchase specific types of vessels for use in the blockade. The archaeological investigation of USS *Narcissus* enabled archaeologists to identify this tugboat as the Union blockade ship that wrecked off the coast of Tampa, Florida, in 1866. Specific measurements of the engine and hull remains allowed researchers to conclude that this type of vessel had an economical propulsion system and shallow draft best suited for a blockade ship operating in shallow water. The history of USS *Narcissus* will demonstrate the value of the tugboat to Union naval strategy and the role these vessels played during the War of the Rebellion. An analysis of the number of tugboats purchased between 1861 and 1865 will show that the functional design and economic value of the screw-propelled tugboat led to the purposeful purchase of this robust design to serve as shallow-water blockade vessels and support craft.

The first chapter provides the historical background that includes a synthesis of information about the development of the tugboat and the importance of its utilization during the ACW. On 19 April 1861, President Abraham Lincoln issued a proclamation of blockade against Confederate ports from Alexandria, Virginia, to the Rio Grande in Texas, an area of nearly 3,000 miles (Porter 1886:17; McPherson 1988:313). The USN scrambled to build and purchase ships of various size and function in order to have



enough seagoing vessels to blockade southern ports. As the war progressed, naval commanders realized that certain ships were more valuable based on mission-specific demands. An extensive survey of the *Official Records of the Union and Confederate Navies in the War of the Rebellion* and *Warships of the Civil War Navies* will examine the diverse roles of the tugboat during the War as well as the specific type of tugboats built and purchased by the Union Navy (sidewheel, sternwheel, and propeller driven). This information will be entered into a spreadsheet database for comparison to allow the author to better understand whether naval commanders believed screw-propelled tugboats were essential to facilitate blockade operations in the shallow waters surrounding southern ports. This analysis will allow the author to inventory the number of tugboats purchased by the USN during the ACW between 1861 and 1865 and to demonstrate whether the number of tugboats purchased and/or constructed increased because of the function and design of this type of vessel. The significance of the percentage of screw-propelled tugboats purchased during each year of the ACW (i.e., the percentage of screw-tugs versus sidewheel and sternwheel tugs purchased between 1861 and 1865) will illustrate the value of this specifically designed vessel to the USN.

The second chapter, the history of USS *Narcissus*, provides a specific example of how the functional design of the tugboat added to the success of the Union blockade. *Narcissus* was specifically purchased, along with a number of other light-draft screw-propelled steam-tugs, by Rear-Admiral David G. Farragut for use in the shallow waters of the Mississippi Sound. While on blockade duty *Narcissus* operated in a traditional role, but also raided Confederate salt works, captured blockade-runners, acted as a dispatch vessel, and was even used as a gunboat to shell Fort Powell during the Battle of

Mobile Bay. In January 1866, *Narcissus* and another tug, USS *Althea*, left Pensacola bound for New York to be decommissioned and sold. Unfortunately, these tugs encountered a storm off the coast of Tampa and *Narcissus*' boiler exploded resulting in the total loss of the vessel and her crew.

The third chapter focuses on the salvage that occurred at the site in the 1980s and the archaeological investigation that enabled archaeologists to conclude that this was indeed the site of USS *Narcissus*. The site is comprised of the buried lower hull structure, engine, stern assembly, propeller, and boiler remains. Since this site is considered a war grave, all archaeological recordation was conducted with a non-disturbance methodological approach.

The fourth and final chapter will analyze and discuss this multi-discipline investigation to better understand the role of the tugboat in the ACW. The functional design of the tugboat that evolved as an element of maritime commerce enabled this type of vessel to become an essential component of the blockade.

USS *Narcissus* suffered from a boiler explosion that resulted in the total loss of the vessel and her crew. When trying to understand the context and meaning of a shipwreck site like *Narcissus*, archaeologists often categorize wreck sites based on how the wrecking event occurred. While terrestrial archaeological sites often occur as the result of intentional abandonment or destruction and are often reused or built upon, many maritime sites are the result of a single catastrophic event (Adams 2001:295-296). Maritime archaeological sites can also be intentionally abandoned, destroyed, or discarded. However, terrestrial sites are more easily accessible and thus may not be protected in a way that allows the archaeologist to gain the most knowledge from their

assemblage. Alternatively, many submerged archaeological sites are relatively inaccessible, thus allowing the information they contain to remain undisturbed.

Catastrophic ship loss sites exhibit the most "distinct differences in the character of their assemblages compared with those found on most land sites" (Adams 2001:296). Most ship loss sites were not intentionally abandoned so all of the material left behind was likely still in use when the ship wrecked. A catastrophic demise has two principal qualities: "contemporaneity and the absence of purposeful selection" because the wrecking event occurred so fast there was likely no time for many of the items on board to be removed (Gibbins 1990:377; Adams 2001:296). For these reasons, submerged sites are often referred to as "time capsules" or "closed finds," depending of course on the nature of environment, salvage history, and site formation processes (Adams 2001:296). This effectively creates "an onboard stratigraphy" that includes "structural elements as well as deposited sediments together with any associated features of use that have sequential and contextual relations" (Adams 2001:297). Therefore, the information acquired from the hull, machinery, fixtures, and fittings of USS *Narcissus* can be intertwined with the history of the ship and the archaeological site to produce a social and technological entity that tells a colorful story. *Narcissus* was built for a specific purpose, sold, and used in naval service. Over a century after the wrecking event, she was salvaged by avocational divers and utilized as a local fishing spot. Evidence of these events have affected the integrity of the wreck site and are now part of the strata of the shipwreck. For this reason, the life-history of the site, not just the vessel, must be considered when interpreting the archaeological data.

*Narcissus* will be analyzed as a machine of function, as a tactical component of military strategy, and as a manifestation of the maritime needs of the Union (Muckelroy 1978:3; Adams 2001:300). Ships do not operate exclusively; they exist within a set of boundaries dictated by social, political, and economic perspectives. The infrastructure of ports, rivers, wharves, coastal and seagoing defenses, and the commodities of trade and commerce all dictate the way ships are constructed and utilized. Analysis of a ship's hull structure and machinery can provide information about the day-to-day use of a specific vessel (Gould 2000:238). Ship construction is a "complex social activity involving organization, co-operation and investment in the long term. Through the economic, social and political mechanisms of which they were part" ships reveal information about past societies that cannot be learned from land sites or through other types of evidence (Adams 2001:300). Analyzing *Narcissus* as a design-dedicated purpose-built tugboat hints at the complexity of the water transport system within which it operated. The operating environment of the ship is important because it affects the practical and technological constraints considered during the structural design of the boat. In the case of *Narcissus*, cultural requirements forced her to be used in an unintended environment and that use inhibited her long-term operational capabilities.

The historical and archaeological study of USS *Narcissus* will show that the economic function and technological design of the screw-propelled tugboat enabled this vessel to play a vital role in the blockade of southern ports during the ACW. Obviously one tugboat or even a fleet of tugboats cannot be solely responsible for the success of the blockade, but this study will highlight how tugboats aided the success of the overall blockade, which affected international politics and the global market.

## CHAPTER I

### TAKING STEAM: THE EVOLUTION OF STEAM TUGBOATS

Marine towing existed long before the invention of steam or diesel power. Naval vessels routinely towed ships incapacitated during combat and merchant ships often relied on aid from other sailing vessels. Yet, sailing vessels were not efficient tugs, even under perfect conditions. The invention of steam propulsion enabled sufficient self-generated power to make towing a viable option. Once this was realized, steamboat owners began seeking opportunities for greater exploitation outside of passenger and freight movement. The need to more efficiently aid vessels entering or exiting port provided the impetus to encourage the design of boats dedicated to towing larger vessels or cargo barges (Rowland 1970:14; Baird 2003:32). Early tugboats looked no different from other steamboats, they were merely called "tugs" or "towboats" based on the way they were used. A long evolution of gradual modifications made to the general-purpose hull design enabled tugs to be more efficient at their jobs. This evolution led to the specific design-dedicated shape of the modern tugboat. This chapter will discuss the reason steam towing emerged as an industry, how the needs of that industry led to a gradual evolution of boat design, and why the specific hull design of the screw-tug made these vessels an essential component of the shallow water aspect of the civil war blockade.

The challenges experienced globally when operating around dangerous shoals, inconsistent winds, unfamiliar currents, and bad weather provided an ideal environment for the development of the towing industry. Sail propulsion required a dependence on favorable tides, winds, and currents and sailing into port was the most dangerous part of a ship's voyage. Ships that made good time across the Atlantic could be delayed for days or weeks at the end of a journey, forced to tack in and out of sight of land if winds and currents were not favorable. Therefore, it is no surprise that steam vessels designed for towing were developed simultaneously worldwide (Baird 2003:21).

One of the first attempts to help get ships safely and efficiently into port occurred in 1737 when Jonathan Hull, an English entrepreneur, patented a design for a sternwheel steamer. His design had a steam engine attached to a stern paddlewheel to aid with "carrying vessels or ships out of or into any Harbour, Port or River against wind and tide, or in a calm" (Rowland 1970:14). Hull believed he had devised a solution to the challenges faced by England's Royal and Merchant Navies when entering or exiting harbor during unfavorable winds and tides. Unfortunately, Hull's design was ahead of the available technology because the steam propulsion engine he used in his design, the Newcomen engine, relied on atmospheric pressure and was incapable of sustained motion (Rowland 1970:14). Although the Newcomen engine, which was originally designed for pumping water out of mineral mines, was inefficient for this specific application, Hull's ingenuity did not go completely unrecognized. His design drawings were reprinted numerous times, even after his death, and the sternwheelers used by the Royal Navy, as

well as those eventually used on the Mississippi during the 19th century, bear a striking resemblance to Hull's original design (Ridgely-Nevitt 1981:13; Matteson 2005:17-18).

William Symington designed the first successful steam tug in an attempt to demonstrate that a steam-powered vessel could tow coal barges along Scotland's Forth and Clyde canal more efficiently than horse- or mule-drawn barges. Symington placed a steam-driven paddlewheel on the tug *Charlotte Dundas* in 1802 in an effort to prove the tug more efficient than a horse-drawn barge. This newly designed wooden-hulled boat, backed by the Forth-Clyde Canal Company, was 56 feet long, 18 feet wide, and had a single horizontal double-acting cylinder, with a 22 inch bore. The engine crosshead drove the bell crank that supplied the movement to the air pump. The addition of a separate condenser allowed the exhaust steam to be condensed more effectively, and when used in conjunction with an air pump, the vacuum capacity increased and caused a corresponding increase in engine efficiency (Rowland 1970:28; Matteson 2005:18). Slides, set on directional guides, kept the piston rod vertical as the connecting rod turned the crank that operated the stern paddlewheel. Trials held in 1802 were successful, but unfortunately Symington soon lost a key supporter. After the trials, the Duke of Bridgewater, Francis Egerton, who was responsible for most of the canals in England and for commissioning eight similar vessels from Symington, suddenly died. Symington's design became moot when the directors of the Forth-Clyde Canal decided the wash created by the steam tug's paddlewheel caused too much damage to the banks of the canal. The order for additional similar boats was cancelled and the *Charlotte Dundas* was left to rot in a creek off the canal until it was finally destroyed in 1861 (Rowland 1970:37-38).

Little documentation related to tugboats in the first half of the 19th century exists since many types of steamboats were used for towing and the design-dedicated hull of modern tugs had not yet been developed (Baird 2003:32). During the winter of 1818, the first New York sidewheel tugboat, *Nautilus*, towed the sailing ship *Corsair* to the quarantine dock (Matteson 2005:21-22). Sidewheelers with two engines initially dominated the towing industry during the first half of the 19th century because they were easier to maneuver with two engines, one for each wheel. Maneuverability is one of the most important characteristics for vessels responsible for pushing or towing cargo.

Initial towing vessels did not have enough work to rely solely on towing for profit. Hence, early towboats spent most of their time operating as freighters and passenger ferries. Robert Fulton designed the *North River Steamboat of Clermont*, or *Clermont*, a sidewheel steamer launched in 1807 and considered to be the first successful steamboat in the world. After his success, he and his financial contributor Robert Livingstone won a monopoly on all steam navigation conducted on New York State waters (Morrison 1958:19-20; Matteson 2005:18). However, in 1824, the Supreme Court in *Gibbons v. Ogden* overruled this monopoly, setting the precedent that no one person could hold a monopoly over steam-propelled vessels navigating on waters in the United States and opening the nation's rivers for steamboat travel and trade (Morrison 1958:44-46; Matteson 2005:19). Shipping prices for commercial items and passengers dropped as a result and river commerce increased. For example, by 1850 the cost to ship a ton of freight from Buffalo to New York dropped from 100 dollars to about 15 dollars. This



enabled companies to easily ship products inland using steam tugs and allowed cities and ports upriver to grow (Matteson 2005:19-20).

In early 19th-century North America, steam technology was largely responsible for developing internal transportation along sheltered coastal passages and river ports. These included the St Lawrence, Hudson, and Mississippi Rivers, and the Great Lakes (Baird 2003:21-24). Many of these waterways were previously considered difficult to navigate under sail because of the long journey from the sea to inland ports. Steam expedited trade into the heartland of North America where other forms of reliable, economically viable transportation were not yet available. Hence, tugboats that had begun their careers as passenger ferries began to replace packhorses, sailing barges, and keelboats and became the primary method for towing cargo (Baird 2003:20-24).

Once the Fulton-Livingston monopoly was overthrown, the towing industry began to grow. In 1828, the *Rufus King* was the first purpose-built sidewheel steam tugboat in the United States to tow vessels to and from the railroad at the New York Dry Dock Company (Baird 2003:24). *Rufus King* was similar in size to the small passenger boats of the early 19th century with a length of 102 feet, a width of 19 feet, and a 7 foot depth of hull. Her size still made her suitable for carrying passengers when not enough towing work was available. The first screw-driven tug was the *Robert Stockton*, built in 1838 with an Ericsson screw propeller. This boat was fitted with a schooner rig and still relied heavily on sail propulsion (Baird 2003:24). Slowly, towing began to emerge as a specific maritime specialization and, by the end of the 19th century, nearly two thousand tugboats operated in the United States (Albion 1939:147).

The tugboat industry and the design of the tugboat hull truly emerged as steamers expanded their services from carrying freight on board to towing cargo barges alongside for extra carrying space. Early steamboat hulls resembled sailing ships "with a narrow raked bow," still rigged for sailing with a vestigial bowsprit that could be removed during towing operations (Baird 2003:21). Yet, the function of tugboats required them to handle differently in the water and a new design was required to fit their role. Early tugs lacked a wheelhouse, leaving the top of the boiler exposed to the elements. The only components visible above the bulwarks were the steering wheel or tiller and the hinged funnel and mast that could be lowered when maneuvering under bridges. A single-cylinder engine attached to a common shaft initially provided the power for both sidewheels. Machinery on the sidewheelers was located in the center of the hull and did not leave room for cargo, especially since addition of the weight of cargo caused the sidewheels to become submerged, making them ineffective.

Separation of the cargo-hauling vessel from the power source saved economic value because it conserved cargo space and reduced towing cost (Landon 1960:46). Once tugs began towing barges alongside, or "on the hip," a second engine was added so each paddle could be powered individually for more maneuverability (Baird 2003:21). With the addition of a second engine and the removal of sails, steamboats needed to be more maneuverable "and required a hull which did not easily heel" (Rowland 1970:52). The "bows [of the steamship hull] were fined down, the stern became less stumpy" and the mid-ships became more rounded (Rowland 1970:52). In addition, as steamships

progressed from sidewheelers and sternwheelers into propeller-driven vessels, the draft increased because the propeller had to be submerged at all times (Matteson 2005:20, 37)

Tugboat design evolved gradually from a general-purpose design to one that was highly specialized. Cargoes initially carried on board added to the weight of the machinery, made the tugs difficult to maneuver, and left little room for extra freight. Then, as tugs gradually shifted to "towing on the hip," towing steamers needed to be able to accommodate all shapes and sizes of watercraft in order to make a profit. In the late 1830s, Samuel Schuyler developed a more efficient solution for towing cargoes by suggesting the steamers tow the various flotillas astern "on the hawser" (Matteson 2005:32). Towing vessels traditionally depended largely on income received from ferrying passengers when tow work was not available and passenger accommodations were located in the stern of tow steamers. However, with the new hawser towing system, the stern needed to be clear for the hawser to have a free sweep. This change in the way tugboats towed their cargoes led to a distinct change in hull design and allowed tugboats to become exclusive to the towing industry (Matteson 2005:32).

Tugboats also began traveling farther out to sea to seek out vessels stuck offshore due to unfavorable winds or tides. These tugboats, referred to as "seekers," began to fulfill a lucrative trade in the early 19th century as steam technology became more common. The hull design of these "seekers" became longer and sleeker with larger coal bunkers since they were traveling farther offshore to intercept ships. Many of these vessels also carried sails to make the most efficient use of their coal consumption. Raked funnels allowed these vessels to achieve a speedy and powerful look to entice those

hiring them. As the tugs became more seaworthy they were able to acquire more towing jobs (Baird 2003:38-39).

As the tugboat industry developed, the tug's general-purpose hull and steam machinery evolved into a design specifically intended for the challenges of towing cargoes. The major advancement in marine engineering came with the development of the compound engine. Before 1860, the engines used "were too heavy, occupied large areas of potential cargo space, and consumed between 4.5 and 6.9 pounds of coal per Indicated Horsepower per hour" (Knauerhase 1967:616). After adoption of the compound marine engine, records show a 30 to 45 percent reduction in fuel consumption. This innovation cleared deck space previously used for fuel, decreased the number of coal handlers and days of travel, and increased the efficiency of steam vessels (Knauerhase 1967:616).

The amount of boiler pressure used on these steamships gradually increased from the 1830s to the 1860s. In the 1830s, the average pressure was 5 pounds per square inch, in the 1840s it was 10 pounds per square inch, and, with the introduction of the tubular boiler in the 1850s, the pressure resistance went up to 20 pounds per square inch (Graham 1956:83). Boiler design was still in its infancy and low quality materials made catastrophic failures common even when the boilers were not abused. Boilers from this period under full pressure were "seen to pant in and out as the internal pressure undulated with the rhythm of the engine" (Matteson 2005:35). Boilers were able to handle increased pressure with the adoption of circular boilers and compound engines in the 1860s. In addition, surface condensers allowed continual use of fresh water instead of salt water,

which caused chemical reactions leading to elevated water temperatures and increased risk of steam accidents or even boiler explosions (Graham 1956:83).

Development of tugboats encouraged commerce and led to the growth of larger ports in inland regions. As the tugboat industry developed, the general-purpose hull and machinery of steamers used to move freight and ships evolved into a specific tugboat design based on economic functionality. This dedicated tugboat design proved to be not only economically viable but also strategically effective when tugs were called to war. Although used at first because they were readily available, tugboats showed versatility and the Union Navy adapted them for other uses. At the onset of civil war, the USN faced a strategic nightmare. The naval fleet was technologically outdated and most vessels were unfit for use. The solution involved purchasing merchant vessels to supplant the meager and decaying Navy. The utilitarian nature of tugboat design enabled these workhorses of the ports to successfully aid the Union Navy in implementing the blockade of southern coasts.

#### The ACW

When the ACW erupted in 1861 the USN was tasked with establishing a blockade along the extensive coastline of the Confederate states. The existing USN was unprepared for this momentous task with approximately 12 ships available to immediately deploy and enforce this blockade. As a direct result of this inadequacy, the Navy began purchasing any mercantile marine vessels suitable for naval duties. Civilian tugboats were initially purchased to serve the normal duties of a tugboat. However, as the blockade strategy coalesced, the effectiveness of the tugboat design enabled these vessels

to prove successful as shallow water blockading vessels. As a result, the Navy began purposefully purchasing tugboats to serve in the blockade. The changing role of the tugboat in a time of war provides insight into the political and economic pressures on the USN during the ACW, as well as into the evolution of tactics within the strategic framework of a blockading strategy.

In April 1861, eight southern states seceded from the Union and three more states were threatening to follow their lead and declare themselves part of the Confederate States of America (CSA) (McPherson 1988; Simson 2001). President Lincoln was left in a quandary over how to respond to this nascent rebellion. On 19 April 1861, Lincoln decided he had no choice but to issue a proclamation of blockade against Confederate ports from Alexandria, Virginia, to the Rio Grande in Texas, an area of nearly 3,000 miles (Porter 1886:17; McPherson 1988:313). The blockade, or Anaconda Plan as it was commonly referred to, would isolate the south from any European commercial relations and essentially strangle the Confederacy both economically and militarily, a feat many foreign nations believed was impossible (Porter 1886:17). The Union would accomplish this monumental task by placing Union ships strategically along the southern coast to interdict the sea lines of commerce and communication emanating from southern ports. In addition to blockading the ports, rivers, and inlets along the coastline, Union blockading vessels were to move up the Mississippi River while northern amphibious forces moved down, in the process capturing strategic locations along the river. Through the successful adaptation of this plan, the North was able to take the offensive and control one of the most important aspects of war, the logistics. As a result, the Southern Army

would not have access to supplies and the southern population would be severed from foreign commerce through the interdiction of the exportation of cotton, as well as from any imported goods and weapons that could not be produced in the South (Mahan 1970:3).

Lincoln's proclamation of blockade looked great on paper, but bringing this vision to reality was harder than it seemed. The USN had a large task at hand with few resources to accomplish it. Technology had advanced more in the last few decades than in the last few centuries, leaving the Navy's ships woefully unprepared for a modern naval campaign. During the 19th century, steam propulsion gradually replaced the wind-propelled vessels that had dominated the water for centuries. Since steam power still posed problems, switching to this type of propulsion was not necessarily economically viable for merchants or for the USN when so many sailing ships were still available. In addition, the lack of need for a powerful USN since the War of 1812 led to a lack of available ships and men with naval experience. In April 1861, the USN had 76 vessels in the naval inventory, yet only 42 of these were commissioned and most were in foreign ports protecting commerce (West 1943:100). Further, the USN was known for its lack of modernity with regard to vessel types and armaments. The lack of a retirement plan in the Navy caused many senior officers with conservative tendencies to continue service into old age. This, in turn, caused many potential senior officers to become stagnant in their positions and actions. Finally, in 1861, the Navy passed laws to deal with these issues, although too late for any substantial change before the secession (Soley 1883:7).

Conversely, Stephen Mallory, the Confederate Secretary of the Navy, served as the chairperson of the U.S. Senate's Naval Affairs Committee from 1853 until he resigned on 21 January 1861 after Florida seceded from the Union. Mallory was a staunch spokesperson for U.S. naval policy and a major advocate for American naval power. During his service on the Senate committee, he particularly worked to modernize the old sailing navy. He was able to successfully construct a number of steam-powered ships during his term, but was only able to get the new ships approved by the Southern-controlled Congress by making sure the draft of these vessels was too great to prevent entrance to Southern ports (Simson 2001:25-27). Mallory was also a staunch proponent of seagoing ironclad warships like those used by the French and British during the Crimean War.

The Confederacy was confident in the decision to secede from the Union because southern states dominated the export of raw cotton during the first half of the 19th century. Raw cotton was responsible "between 1815 and 1860 [for] more than half of the total value of domestic exports" from America (Wolf 1982:279). The prime importer and consumer of the raw cotton was England. England's domination of the consumption of raw cotton for textiles caused it to emerge as one of the most powerful nation-states in the world during the 19th century. According to Eric Wolf, "[b]y 1807...more than 60% of all the bales that landed at London, Liverpool, and Glasgow came from England's former colony, the United States, and the United States remained the main source of English cotton thereafter" (Wolf 1982:279). The importance of cotton to England made the



Confederates believe the English would soon enter the war in support of secession (Wolf 1982:279).

On the eve of the ACW, the largely agrarian southern states lacked an internal manufacturing infrastructure and looked to their English commercial colleagues for support. Stephen Mallory's primary naval strategies included building ironclad steam-propelled warships to help keep southern commerce lanes open and commissioning commerce raiders to attack northern maritime mercantile commerce (Simson 2001:37). Mallory sent purchasing agents to England to buy armaments and supplies for the Confederacy. These agents also secured contracts to construct commerce raiders that incorporated the emerging technologies of steam power. Because of the active blockade of southern ports, all goods, both merchant and military, had to be smuggled in on light-draft, steam-powered blockade-running vessels. As the war efforts progressed, attempts "to run and enforce the Union blockade of Confederate ports also generated new technological demands...steam-powered iron- and ultimately steel-hulled ships...displaced even the fastest sail" (Watts 1996:207). By 1862, the blockade-runners were highly specialized ships specifically designed to outsmart the Federal fleet. These ships were fast, light draft, and burned smokeless coal to evade capture (Surdam 2001:3).

International law dictated that as soon as the United States government enacted a blockade of southern ports, a permanent coastal force was required to patrol southern ports and coastlines (McPherson 1988:382-387; Weddle 2002:125). The Confederate States hoped to gain the support of Great Britain by claiming that the blockade was not effective and that Lincoln's proclamation violated the neutral rights of their primary

trading partners. However, their cries of ineffectiveness fell on deaf ears when Great Britain officially recognized the blockade in February 1862 (McPherson 1988:382-387).

Gideon Welles and Gustavus Vasa Fox, the Secretary and Assistant Secretary of the Navy, began taking the necessary steps to ensure the effectiveness of the blockade immediately after Lincoln's proclamation. First, Welles ordered many of the ships protecting foreign commerce and conducting anti-slave trade patrol recalled. Next, Welles issued orders to the commandants of various naval yards to lease or purchase vessels suitable for blockade duty. Welles provides some insight into the types of vessels he wanted purchased in his 21 April 1861 letter to Samuel Du Pont, the Commandant of the Philadelphia Navy Yard. Welles stated "[b]y order of the President of the United States, you will forthwith procure five staunch steamers of ten to twelve feet draft, having particular reference to strength and speed and capable of carrying a 9-inch pivot gun" (Welles 1861:56). Acquiring vessels for blockade duty was important, and the type of ships Welles ordered the commandants to purchase was of primary concern.

A significant advantage the Union had over the Confederacy was the majority of the nation's merchant ships and shipbuilding facilities were located in the north. As a result, the Union Navy was able to purchase or charter merchant ships, arm them, and send them south for blockade duty. Yet, many of the ships available for purchase were either large, deep-draft sailing vessels that had difficulties entering the shoal-ridden harbors of the Confederacy or were sailing frigates and sloops of war not suited for blockade duty (Porter 1886:17). Even steamships often relied heavily on auxiliary sail power and many of these steamers were sidewheelers or sternwheelers. Paddlewheel

steamers were initially deployed due to their availability, despite the fact that near shore small arms fire could easily disable their paddles. Even the screw-propelled vessels initially acquired for blockade duty had difficulties in the shallow waters because many were designed for sea travel and had too deep a draft.

The USN had as many as one hundred applicants a day offering to sell their coastal steamers, ferries, and tugboats. These ships were often in poor condition and offered at inflated prices (Matteson 2005:66). Secretary of the Navy Welles soon realized that ship owners were exploiting the naval officers hired to purchase ships. As a result, Welles decided to hire his daughter's brother-in-law, a New York businessman familiar with making commercial deals (Matteson 2005:66). By the end of 1861, 260 warships were on blockade duty and more than 100 were under construction in northern shipyards (McPherson 1988:313-314). By January 1862, the Navy had purchased 95 vessels ranging from 90 to 2,000 tons. The 95 vessels purchased included "37 sailing vessels, 32 coastal steamers, 8 ferryboats, and 18 tugs" (Matteson 2005:67). After vessels were purchased, they were sent to the Brooklyn Navy Yard or to private shipyards for conversion for naval service. Deck railings and pilot houses were covered with light armor plating, gun platforms were added on the bow and stern, and space was cleared for powder storage and berthing. Boilers were often moved below deck to avoid enemy shot (Matteson 2005:67). As soon as modifications were complete these ships were sent south to join the naval blockade.

The Navy's initial need to fill southern coasts with blockading ships forced them to purchase ships of all shapes and sizes. Yet, as time passed, many naval commanders

realized that steam-tugs were extremely valuable on blockade. The tug's functional hull design enabled them to be utilized for traditional roles like towing captured enemy vessels for acquisition and removing large deep draft sailing ships from sandbars. The tugs' shallow draft and steam power allowed them to conduct inshore patrols since they could access shallow inlets and rivers. Tugs were also used to transmit information from one ship to another and, on occasion, to capture a Confederate ship attempting to run the blockade. The utilitarian nature of steam-tugs permitted them to fill a void and to participate in a variety of blockade activities that other vessels were unable to fulfill.

In 1862, after charges of nepotism arose, Hiram Paulding, Commandant of the New York Navy Yard, replaced George Morgan, the Secretary of the Navy's nephew-in-law, as the official ship purchaser of the Navy. These charges were later found to be bogus and Welles and Morgan were exonerated, but Morgan was still relieved of duty (Matteson 2005:68). On 21 August 1862, Admiral Samuel F. DuPont, commanding the North Atlantic Blockading Squadron, wrote to Gustavus Vasa Fox regarding a job well done by Morgan for purchasing steam tugs that were so valuable for blockade duty:

[I]n 15 minutes we put howitzers and guns on the tugs and off they go—Oh those blessed ubiquitous tugs—They were your thought, and *I* have often thought, if poor Morgan so much abused had never thought anything else, he would have earned his money. No estimate can be placed on their value here—we have managed to repair them in turn, and they have paid for themselves ten times over (DuPont 1862; Matteson 2005:68-69).

George Morgan realized the usefulness of tugs, and even after his dismissal from purchasing duty the Union Navy continued to purchase tugboats throughout the civil war.

#### An Analysis of Tugboats Purchased During the Civil War

In order to understand the importance of screw-tugs to the blockade strategy of the Union Navy, the author created a spreadsheet of all tugboats acquired or built by contract between the years of 1861 and 1866. In 1861, the USN scrambled to build and purchase ships of various size and function in order to have enough seagoing vessels to blockade southern ports. As the war progressed, naval commanders realized that certain ships were more valuable based on mission-specific demands. *Warships of the Civil War Navies* (Silverstone 1989) lists all screw- and sidewheel-propelled tugboats, the year and location of construction, the year of acquisition, year of commission, the size and speed of each vessel, machinery type, armament, complement, and a brief service record. All of this information allowed the author to create a spreadsheet for comparison with all vessels listed as "tug" in the *Official Records of the Union and Confederate Navies in the War of the Rebellion* (United States Naval War Records Office [USNRO] 1921 II[1]). This analysis allowed the author to examine the number and type of tugboats purchased by the USN during the ACW and to demonstrate whether an increase is apparent in the number of tugboats purchased and/or constructed. The significance seen in the percentage of screw-propelled tugboats purchased during each year of the ACW (i.e., a larger percentage of screw-tugs purchased and a decreasing amount of sidewheel and sternwheel tugs between 1861 and 1865) is indicative of how valuable this specifically designed vessel was to the USN.

The number of tugboats purchased significantly increased in the years 1863 and 1864 (Figure 1). In 1861, the Union Navy purchased seven screw-propelled and seven sidewheel tugboats. This corresponds with the Union Navy's initial purchase of all available vessels for blockade duty since the method of propulsion did not seem to be significant in tug selection. However, as the War raged on, demand for screw-tugs increased. In 1862, 10 screw-tugs and only four sidewheel tugs were acquired. In 1863, the type of propulsion became more important as 30 screw-tugs were purchased compared to only five sidewheelers. In 1864, the Navy purchased 36 screw-tugs and no sidewheel tugs. In 1865, only seven screw-tugs were acquired and no sidewheel tugs. A number of screw-tugs were contracted to be built in 1865 and some were not finished until 1866, which is the reason two screw-tugs show up in the analysis after the War was over (Appendix A). Out of the 1,072 ships listed in the *Official Records of the Union and Confederate Navies in the War of the Rebellion*, 117 are tugboats. Tugboats effectively made up 11 percent of all of the ships in the Union Navy by the end of the ACW (USNRO 1921 II[1]).

Tugboats were purchased from 10 states: California, Connecticut, Delaware, Louisiana, Massachusetts, New Hampshire, New Jersey, New York, Ohio, and Pennsylvania. Twelve vessels were listed as being transferred from the War Department and their state of origin was not recorded. New York and Pennsylvania supplied the

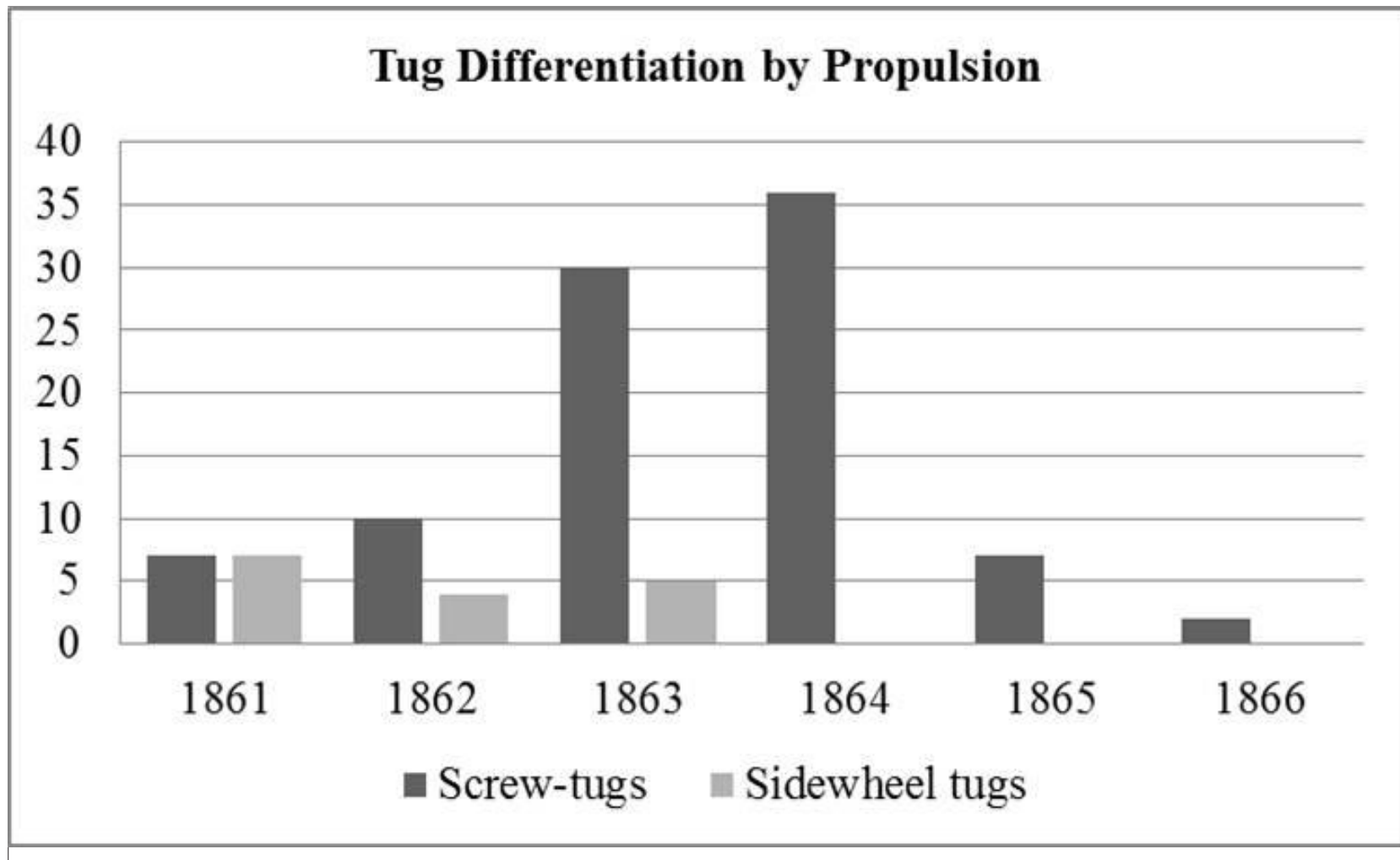


Figure 1. Graph showing tugboats purchased by the United States Navy between 1861 and 1865. Tug differentiation by propulsion.

majority of tugboats with 32 acquired from each state. Most of the sidewheel tugs were purchased in the early years of the War by George Morgan since only five sidewheelers were purchased after 1862 (Matteson 2005:69) (Appendix A). One of the significant observations that became apparent after the analysis was that no sternwheel tugs were acquired for blockade service. The lack of sternwheel tugs purchased by the USN during the ACW is likely due to the fact that the adoption of hawser towing made sternwheel towing vessels less utilitarian and thus less desirable to the Union Navy.

Tugs on blockade duty functioned as service vessels as well as armed combatants. They were most valuable as coastal patrol vessels along the many bays and rivers in the south. Most tugboats were armed unless they were specifically designated as support craft such as those serving on the western rivers (Silverstone 1989). Tugs often served on picket duty watching for the movement of Confederate vessels. Since most tugboats had a lighter draft they were able to scout into creeks and estuaries seeking out Confederate salt works and other installations. Tugs frequently operated in extremely shallow water, on occasion requiring the use of their own hawsers attached to trees along the banks to tow themselves across shallow bars. At least four tugboats were armed with spar torpedoes (Silverstone 1989). The *Hoyt* was one of these spar torpedo tugs designed as a weapon to oppose Confederate rams on the Roanoke River, but never saw combat (Silverstone 1989:117). Highway and railroad bridges used to move Confederate supplies also became targets for the shallow-draft steam tugboats (Matteson 2005:69). Although tugboats participated in ship-to-shore battle, they were employed more for the suppression of small arms fire rather than as primary bombardment vessels (Silverstone 1989). When



traveling in front of an armed battery, many tug crews placed a barge loaded with hay between their boat and the shore guns to prevent damage (Matteson 2005:69).

Tugs also operated in a traditional sense serving as support craft and towing vessels. The majority of tugboats that served on the western rivers only acted as tugs. Coastal blockade required supply ships stationed offshore and these vessels were often obsolete, deep-hulled sailing ships that were more easily moved by tugs. Ships on blockade duty that became incapacitated had to be towed to local naval yards for repair. Tugs acted as dispatch vessels carrying information, orders, and mail from ship to ship. They were also used as liaison craft to transfer men from vessel to vessel and to and from shore (Matteson 2005:69).

As the Union Navy proceeded to cut off the Confederacy from foreign trade, one of their primary objectives was to capture or destroy fortified shore batteries. Traditionally, a ship of the line did not stand a chance if immobilized within firing distance of a shore battery. Yet a sail-propelled or steam ship could get within firing range with a tugboat along the side opposite the battery, prepared to tow the vessel out of harm's way if necessary. This allowed large gunships increased maneuverability while in battle (Matteson 2005:69).

Tugboats experienced a phenomenal amount of wear and tear while on blockade duty. They often experienced rough weather, grounding, and enemy fire. The recoil from firing guns added severe stress to their wooden hulls and often caused leaks and mechanical issues (Matteson 2005:69). In addition, inshore operations did not always allow the tugs to have access to fresh water so crews used brackish water in their boilers,

which caused the boilers to clog with salt scale. The tremendous strain of blockade duty resulted in tugs constantly being sent to the naval yards for repair (Matteson 2005:71).

Tugboat design emerged out of functional necessity as maritime commerce became more reliant on steam technology to aid ships in and out of harbors. The general-purpose hull design and steam machinery of early steamers evolved into a specific tugboat design based on economic functionality. At the onset of civil war, the USN purchased merchant vessels to enforce the blockade of southern coasts. The utilitarian nature of the screw-tug was quickly realized once the steamers reached the blockade. The screw-tug's usefulness is demonstrated by an increase in the number of screw-propelled tugboats purchased between 1861 and 1865. Tugboats serving with the blockading squadrons performed a variety of mission specific tasks. Tugboats were not only used as towing vessels, as their shallow draft and powerful steam engines enabled them to be effective coastal patrol craft, service vessels, and armed combatants as well. The specific history of USS *Narcissus* provides a case study of how the functional design of the tugboat added to the success of the Union blockade.

## CHAPTER II

### HISTORY OF USS *NARCISSUS*

Letters written from David Glasgow Farragut, the Rear Admiral commanding the West Gulf Blockading Squadron (WGBS), to Gustavus Vasa Fox, the Assistant Secretary of the Navy, constantly highlight the need for light-draft steamers for blockading duty. On 30 January 1862, shortly after arriving in the Gulf of Mexico, Farragut stated "there may be more places for *light-draft vessels* than we can supply immediately, but we can certainly make it better, than it has been" (emphasis in original) (Farragut 1862a I[21]:299). On 12 February 1862, Farragut again mentions his desire for small, light-draft steamers in a letter to Fox: "I find that I have fifteen sailing vessels, and will have to put them all on the blockade, and you are well aware that they are very insufficient guard against steamers, particularly in calm weather, but I promise to do the best I can with them" (Farragut 1862b I[21]:301). He continues to say that one of the greatest difficulties he faces is the "shallowness of the waters we have to operate in, but by having vessels of light-draft, they can almost invariably be circumvented" (Farragut 1862b I[21]:301). Farragut's letters show he believed once he had shallow-draft vessels he would be able to cut off reinforcements and supplies to the forts of the Confederacy and to compete against the specialized blockade-running steamers utilized by the South.

As the Civil War raged on, the need for light-draft steam vessels became even more crucial to the success of the blockade. The shallow waters and sandbars at port

entrances were a constant problem. Often, deep-draft ships on blockade duty had to remove all equipment on board to lighten the ship, thereby reducing draft so the ship could be towed over the sandbars (Farragut 1862c I[21]:307). Even the lightened ships, however, found it difficult to prevent the swift steamers of the Confederacy from running the blockade at night. Farragut mentions the dire situation for blockading ships in a letter to Fox on 11 October 1862: "You are lying still, & the vessel is upon you before you see her going 12 or 14 knots & before you can get your men to aim a Gun she is past you, if you hit her, it is all up with her but, the chance of hitting is small under such circumstances" (Farragut 1862d I[21]:318). Once a blockade ship spotted a suspicious vessel signals were hoisted to alert the other blockading ships on patrol (Jenkins 1864a I[21]:55-57). Yet letters from Farragut to Fox in 1863 continue to show his frustration regarding the lack of shallow-draft vessels purchased for blockade duty in the WGBS. One solution to Farragut's problem would prove to lie in the utilization of steam tugboats for the WGBS. Light-draft steam tugs facilitated the evolution of close blockading tactics since they could operate in shallow waters. They quickly proved their worth, and vessels such as USS *Narcissus* demonstrated the utility and effectiveness of steam tugs as blockading vessels.

#### Vessel History of USS *Narcissus*

*Mary Cook* was launched in July 1863 in East Albany, New York. On 23 September 1863 Rear Admiral Hiram Paulding, commandant of the New York Navy Yard, purchased *Mary Cook* from James D. Stevenson before completion. *Mary Cook* was a wooden-hulled screw-tug with a single cylinder steam engine and one boiler with a

single furnace. She was 101 tons, 81 feet 6 inches in length, with a beam of 18 feet 9 inches, and a depth of hold of 8 feet. After purchase, she was immediately taken to the New York Navy Yard where she was modified for blockade use (USNRO 1921 II[1]:155). Northern periodicals boasted of the large fleet sitting in New York harbor. The *Illustrated New Age* (1863:2) noted that the "Steamtugs *Geranium*, *Narcissus*, *Sweet Brier* and *Camelia*" had just been added to the Navy and that "these and several other vessels have been purchased for the purpose of acting as tow-boats in the South Atlantic fleet – a whole squadron of them having been sent away within weeks." The 9 December 1863 issue of the *Portland Daily Advertiser* (1863:4) and of the *Boston Daily Advertiser* (1863:1) reported important naval orders, communicated by telegraph, that Rear Admiral Francis Gregory had ordered the officers of a number of vessels to report immediately to the New York Navy Yard for duty; among these vessels was the *Narcissus*.

Gideon Welles sent a message to Hiram Paulding on 23 November 1863, stating that *Narcissus* should be sent to the WGBS (Welles 1863 I[20]:695). On 30 November 1863, in a letter to Gustavus Fox, David Farragut mentioned he had seen Admiral Gregory about "purchasing, arming, and protecting [the light-draft vessels, which included *Mary Cook*] with sheet iron against musketry" and to send them as soon as possible (Farragut 1863 I[21]:338). On 2 February 1864, *Mary Cook* was commissioned and renamed USS *Narcissus* (USS *Narcissus* Service Record 1864; USNRO 1921 II[1]:155). This vessel was armed with a 20-pdr muzzle-loading rifle and a 12-pdr smoothbore gun (Silverstone 1989:119). The Acting Master's Mate, Carleton A. Trundy, seems to be the first officer appointed to the *Narcissus*, but his orders were revoked

before she set sail (*Boston Daily Advertiser* 1864a:4; USS *Narcissus* Service Record 1864). The service log of *Narcissus* shows Acting Ensign William G. Jones commanding *Narcissus* on 2 February 1864 (USS *Narcissus* Service Record 1864).

On 8 February 1864, Farragut sent word to Fox that he had still not received the light-draft vessels from Admiral Gregory and they were greatly needed if he was to keep up the façade of an attacking force at Mobile Bay. He also stated Admiral Gregory had sent a number of unsheathed ships: "he forgot that they were to be used in salt water where the worm bites worse than any where in the world, [and] they must all be covered with copper or yellow metal before they leave New Orleans" (Farragut 1864a I[21]:343). Thus, as each ship arrived for blockade duty, Farragut sent them to New Orleans to be hoisted and sheathed with copper or yellow metal (Farragut 1864a I[21]:343).

Welles again sent word to Paulding on 25 January 1864 stating, "[a]s soon as the *Cowslip* and *Narcissus* are ready for sea direct them to proceed to New Orleans and report to Rear-Admiral Farragut for duty in the West Gulf Blockading Squadron" (Welles 1864a I[21]:54). *Narcissus* left the New York Navy Yard on 2 February 1864 with the following officers: "Acting Ensign, W. G. Jones; Acting Master's Mates, C. R. Marple, E. A. Morse, E. G. Caswell; Acting Third Assistant Engineer, J. L. Young, C. E. Black, M. Berry, J. R. Davidson" (*New York Times* 1864:3). The *Boston Daily Advertiser* reported in shipping news that on 18 February 1864 the steamer USS *Narcissus* was hailed by the schooner *Harriet Newell*, about 20 miles northeast of Sombrero Key in route from Jamaica to New York. Everyone on the schooner was sick with a fever except for one man so Commander William G. Jones sent E. Cornell, the Master's Mate, and

five seamen from *Narcissus* on board the schooner with instructions to take the ship to Key West (*Boston Daily Advertiser* 1864b:4). In a letter to Welles dated 28 February 1864, Farragut stated only two of his light-draft steamers had arrived from New York, the *Cowslip* and *Narcissus*, and by 1 March *Narcissus* had made it to New Orleans (Farragut 1864b, 1864c).

Problems abounded with the machinery and wooden hulls of the light-draft steamers on blockade duty. In the letters sent from Farragut to Fox, he constantly refers to the fact that he does not have enough steamers and those he has are always in need of repair. Gustavus Fox stated in one letter to Farragut, "[w]e have our navy yards, filled with broken down vessels, and we know your wants and will exert ourselves to help you, but the more we send, the more they seem to come back" (Fox 1862:317). *Narcissus* and *Cowslip* were sent from New Orleans to Pensacola where Farragut commanded. On 3 March, Farragut remarked that *Narcissus* was leaking so badly the men were "reduced to ba[i]ling" (Farragut 1864d I[21]:123). Farragut sent *Narcissus* back to Commodore James S. Palmer, Commander of the 1st Division of the WGBS off New Orleans, to be used as a tug under Palmer's command once she was repaired (Farragut 1864d I[21]:123). The "Stations of Vessels" list from 5 April 1864 provides another example of the problems with steamers on blockade. Out of the 11 steamers listed off New Orleans (not counting tinclad steamers) nine were being repaired. *Narcissus* went to Pensacola for repair in June, July, and November 1864 (Farragut 1864e, 1864f, 1864g).

The shallow draft of the tugboats allowed them to get over sandbars blocking entrances to harbors and to "tug [the deep draft ships] over" if required (Farragut

1862e:307). Farragut believed *Narcissus* and other similar vessels "do very well as tugs, [and] did not cost half as much as any one of those steamers" (Farragut 1864h I[21]:377). Thornton A. Jenkins, the Captain Commanding the First Division of the WGBS, stated "tugs are indispensable for communicating with New Orleans, Dog River Bar, Mississippi Sound, Pensacola, and with Pilot Town, where it is too rough to send ships boats" (Jenkins 1864b I[21]:750). Gideon Welles referred to tugs as "bar tenders" since they could move in close to the inlet after dark and watch for blockade-runners attempting to enter or exit the port (Watts and Lawrence 2001:85).

One of the few benefits of blockade duty was the chance to capture prize money from blockade-runners. Successful blockade-runners relied on steam power instead of sail and, by the end of 1862, the majority of blockade-runners utilized specialized ships designed to "elude the Federal fleet both by speed and design (light-draft and special silhouette)" and by the addition of special smokeless coal (Surdam 2001:3). The specialized design and the evasive movements of blockade-running ships made capture by blockading ships much more difficult. Yet, each time someone spotted a strange sail on the horizon the crew began speculating about the potential cash value of the ship's cargo in sight (Bennett 2004:62). Problems arose with blockade ships losing potential runners because crews were afraid of damaging valuable goods such as liquor, cotton, or tobacco. According to the prize law of 3 June 1864, "All vessels of the Navy within signal distance of the vessel or vessels making the capture under such circumstances and in such condition as to be able to render effective aid, if required, shall share the prize" (Farragut 1864i I[21]:669-670). Often, blockade ships chased suspicious vessels without



alerting the rest of the squadron because the crew sought to avoid splitting the prize. Chasing blockade-runners without assistance from other blockade ships was often counterproductive because blockade-runners would frequently "waif" or toss bales of cotton overboard knowing that the Union vessels would stop to pick them up (Bennett 2004:63).

In response to issues over the capture of illegal cargoes, Gideon Welles instituted the practice of awarding bounties for destroying ships instead of awarding prize money; officers and sailors split the money based on rank (Bennett 2004:64). This new protocol forced the Union blockading ships to concentrate on preventing illegal trade and destroying blockade-runners, instead of focusing on the price of their illicit cargoes. Yet, this change did little for the morale of sailors on board since the bounty money was proportioned based on rank and enlisted sailors received the smallest portion (Bennett 2004:64).

*Narcissus* served in the waters around New Orleans, Louisiana, until April 1864 when she was sent to the Mississippi Sound (Drayton 1864a I[21]:188). She spent much of her time in Mississippi Sound with the side-wheel tug *Cowslip*. The log of the USS *Cowslip* provides detailed information related to some of *Narcissus*' activities while cruising in the Mississippi Sound (Canfield 1864 I[21]:791-794). On 17 April 1864 at 2:30 P.M., *Cowslip* noticed "the enemy" on the beach near Pascagoula, Mississippi, attempting to capture four mules (Canfield 1864 I[21]:792). *Cowslip* fired two shots from their 30-pdr Parrott gun and *Sebago* and *Narcissus* sent boats to try to capture the mules.

The men in the boats ended up shooting the mules because they were not able to capture them (Canfield 1864 I[21]:792).

*Narcissus* seized two sloops off Bayou La Batre on 19 April 1864 (USS *Narcissus* Service Record 1864). An article published in the *New York Times* stated that this seizure of vessels involved capturing a "very valuable prize of rebel mail and \$6,000 in Confederate scrip" (*New York Times* 1864:8). *L'Union*, a newspaper published in Louisiana from 1862 to 1864, printed a letter from a correspondent in Mississippi stating that one of the vessels captured by *Narcissus* contained flour, corn, tobacco, rice, cotton, eight people, and important supplies. Several letters found among the captured items were addressed to people missing in New Orleans including the Belgian Consul and the superintendent of the railroad from New Orleans and Pontchartrain, as well as a letter from General Beauregard in Charleston, South Carolina, dated 4 April 1864. Also included in the capture were Confederate treasury bills totaling \$4,000 payable two years after the end of the Civil War and 12,000 newly printed Confederate bills (*L'Union* 1864:3). A letter from Fleet Captain Percival Drayton of the USS *Hartford* to Captain Jenkins commanding the 2nd Division of the West Gulf Blockading Squadron off Mobile, mentioned papers *Narcissus* brought to them. Apparently, the telegraph was interrupted north of Petersburg, Virginia, making trustworthy intelligence difficult to find. Drayton also stated he was keeping the two refugees brought by *Narcissus* because too many refugees were running loose (Drayton 1864b I[21]:288-289).

*Cowslip's* log mentions tying up to a wharf at Mississippi City, Mississippi, on 20 April 1864 and communicating with "the enemy under a flag of truce" although the log

does not mention *Narcissus* being involved in this event (Canfield 1864 I[21]:792). This occurrence of using the flag of truce and the mule incident mentioned earlier could be examples of what Farragut referenced in his letter on 2 May 1864, sent "to the commanding officers of the US steamers *Cowslip* and *Narcissus*, regarding the abuse of the flag of truce" (Farragut 1864j I[21]:238):

I have understood that since the *Narcissus* and *Cowslip* have been in the [Mississippi] Sound you have been using flags of truce, on all occasions, for communicating with the rebels on the coast of Mississippi, and that you have also frequently fired upon the harmless people on the shores. I hope that these things are not true, but you will bear in mind that you have no right to use the flag of truce except to communicate with Government authorities, and that you should not fire upon unarmed people. There are a great many Union people on that coast, and you should have good reasons for firing upon those who do not fire upon you. You will report to me your action in this matter.

*Narcissus* continued her blockade duty in the Mississippi Sound capturing boats and destroying salt works with *Cowslip* in May, June, and July of 1864 (Canfield 1864 I[21]:791-793). On 13 May *Narcissus* captured two sloops off Dauphin Island (USS *Narcissus* Service Record 1864).

In the early days of June 1864, the *Sebago*, *Cowslip*, and *Narcissus* made a raid on the Biloxi area. On 30 May 1864, Farragut instructed Lieutenant-Commander William E. Fitzhugh, commanding the gunboat *Sebago* in the Mississippi Sound, to go on the *Cowslip* for the proposed expedition, but to make sure another boat accompanied them in

case of any problems getting on shore. He also instructed him not to cross the bar if there was any chance they would not be able to get on shore once inside. Farragut suggested Fitzhugh get two of the smaller steamers over the bar first before any advance was made inside (Farragut 1864k 1 [21]:312). According to *Cowslip*'s log, on 1 June 1864, *Narcissus*' first cutter, the first cutter of the *Cowslip*, and the *Vincennes*' launch began an expedition into the bay of Biloxi to capture boats (Canfield 1864 I[21]:792). On 2 June, *Cowslip* summarized the day by stating they "[c]aptured 5 sloop-yachts, destroyed 6 large sloop boats, 3 large flatboats, 4 salt works, captured 1 small steam boiler" and anchored off a shipyard where they were grounded overnight (Canfield 1864 I[21]:792). At 4:30 A.M. the next morning, *Cowslip* set out down Biloxi Bay towing *Narcissus* with their newly captured prizes tied astern. At 7:45 P.M., both ships ran aground across from Ocean Springs, Mississippi, where they sat in the rain, thunder, and lightning (Canfield 1864 I[21]:793). *Cowslip*'s log related to the specific actions of *Narcissus* during the raid in Biloxi Bay becomes vague at this point. However, the launch and third cutter from the *Vincennes* continued up to Fort Bayou, Mississippi, to capture a schooner seen at anchor. They returned at 3:15 A.M. on 4 June with two Confederate prisoners, Captain Tobey and Lieutenant Wilkinson (Canfield 1864 I[21]:793). The service logs of *Narcissus* state the vessel successfully "captured and destroyed boats and stores in [the] expedition against the town of Biloxi" (USS *Narcissus* Service Record 1864).

The actions that occurred during this raid did not go unnoticed in the local papers. The 18 June 1864 edition of the *New Orleans Weekly Times* printed an article about the raid that clearly displayed pro-Union sentiment. According to the article, the gunboats

USS *Narcissus* and USS *Cowslip* made a raid up into the back of Biloxi Bay, grounding near Ocean Springs, Mississippi. Crews took 24 hours to get the boats off the flats, which they were able to do only after heaving their anchors and removing the vessels' iron plating. According to the newspaper, although many attempts had been made, this was the first time any vessels successfully crossed this shallow area into the rivers at the back of the bay since the war began. *Cowslip* and *Narcissus* proceeded up the Tchoutacabouffa River, destroyed salt works, boats, and ferries, progressing 25 miles further than any steamer had been before or during the War. The capture of the two Confederate officers shocked people in the area because no one thought Union ships could get over the flats. The *Times*' pro-Union sentiment praised the Union since they brought much needed rain to the area and the officers were valiant in their actions even though they were soaked to the bone throughout the event. The article even claimed that women along the river serenaded the blockade ships as they made their way along the river. The blockade ships apparently captured one deserter and several refugees, and any prizes that could not be carried back were destroyed (*New Orleans Weekly Times* 1864:3).

*Narcissus* also engaged in curbing illicit trade between shore and blockading ships. One of the most common items sailors sought by any means was alcohol. Sailors were often heavy drinkers and alcohol consumption on blockade ships was a constant problem for Union officers. In the early days of blockade duty sailors received a daily ration of grog once before breakfast and again before supper (Bennett 2004:104-105). Sailors often relied on alcohol to postpone the depression brought on by loneliness and by the daily monotony of routine while on blockade duty. Sailors boarding blockade-running

ships often sought out alcohol before all else and became drunk and disorderly. Alcohol affected sailors' performance while on duty and led to disciplinary problems including fights, stealing, and disobeying orders. Drinking became such a problem that on 17 July 1862 Congress passed "An Act for the Better Government of the Navy of the United States" to curb morally wrong behavior including drinking, "cruelty, swearing, lying, and gambling" (Bennett 2004:109-110). On 1 September 1862 alcohol was banned from United States Naval vessels (Bennett 2004:110).

The abolition of alcohol did not stop sailors from drinking. Illegal trading with shore-based suppliers was rampant, and sutlers sometimes sailed out to meet Union vessels so Navy men could purchase overpriced alcohol referred to as "Rot Gut" and "Red Eye" (Bennett 2004:111). Jars and cans of food mislabeled as oysters or other food items were smuggled on board Union ships (Bennett 2004:111). This illegal trade between the blockade ships and Southerners along the coast often caused headaches for those in charge. In a 20 May 1864 letter to Captain Jenkins, commanding the 2nd Division of the WGBS off Mobile, Flag Captain Percival Drayton instructed Jenkins to stop the "trading business" (Drayton 1864b I[21]:289). Farragut sent word to Commodore Palmer, commanding the 1st Division of the WGBS, on 20 May 1864 instructing him "to refuse passes to vessels wishing to trade with the Mobile fleet" (Farragut 1864 I[21]:289):

COMMODORE: Hereafter it is my direction that no boat or vessel be give any pass to trade with the fleet off Mobile or in Mississippi Sound. It is simply an excuse to go that far, and if they see no one in sight owing to thick weather or

other cause, they avail themselves of it to run into Mobile or other place within the enemy's lines, and the blockaders would much rather supply themselves at Pensacola or New Orleans, or from the supply vessels. I find these boats using my passes to carry on the above-mentioned trade with the enemy, as well as to smuggle liquor to the men on board our vessels. The fishermen and oystermen you can still grant permits to, but inform them that they will be captured if found with goods in their boat for trade.

Farragut then replied to a letter received from Acting Ensign William G. Jones, commanding *Narcissus*, on 20 May 1864 "regarding the restriction of privileges to trading boats" (Farragut 1864m I[21]:289-290):

SIR: Your communication of the 16th instant, referring to the sloop *Leila*, has been received. Under the circumstances, as stated by you, the boat should not have been delivered up, and I have so informed Commodore Palmer. Hereafter no passes will be granted to any boats to trade with the fleet, either in Mississippi Sound or off Mobile. You will therefore stop all boats with passes, take the passes from them, and order the boats back to New Orleans, giving the captains a certificate that you are doing this by my orders. You will proceed with the *Narcissus* at once to Mississippi Sound and report to the senior officer present stopping off Mobile, if you can do so before night.

Farragut's concern about the illicit trading is not surprising. Blockade-runners tended to leave port around twilight when the setting sun caused the horizon to blur. Moonlit nights

kept the blockade-runners in port because they would be too easy to spot. Runners preferred cloudy or foggy nights because hazy conditions made spotting them much more difficult for the blockade ships (Bennett 2004:58). A letter from Farragut to Lieutenant-Commander William E. Fitzhugh, commanding the USS *Sebago*, mentions an attempt to capture a Federal vessel in Pascagoula (Farragut 1864n I[21]:330-331):

CAPTAIN FITZHUGH: I learned yesterday that it was no doubt the intention of the rebels stationed around Pascagoula to attempt the capture of one of our small steamers, and that the plan was to make some excuse for a flag of truce and draw the captain or an officer with a boat's crew on shore and in a little while, by way of evincing their good feeling, offer liquor freely and get the men drunk and, I suppose, send some on board the steamer. In the meantime they would prepare a vessel with cotton bales around to protect their men and go out and board the steamer. The *Narcissus* was the boat they most desired. Mark the moral—that our men are such drunkards that they can calculate with almost certainty on it to capture the vessels. Two vessels have recently been captured in this manner on the coast of Texas. In one case the officer says he left the deck for not over ten minutes in charge of the best man he had, the acting boatswain of the *Kineo*, and when he came on deck the whole prize crew were beastly drunk, and the boatswain so crazy that he jumped overboard and was the only man saved from prison. The rest were captured. I wish you would have these facts made known to the men of your crew and the other vessels in the [Mississippi] Sound and guard



them against having any flags of truce or exposing their men to the temptation of liquor (brackets in original).

Illegal alcohol trade led to the danger of having intoxicated sailors on duty and only exacerbated the difficulty of trying to capture blockade-runners. Southerners were obviously aware of the Union sailor's lust for alcohol and even attempted to use it to their advantage.

### *Battle of Mobile Bay*

In August 1864, Rear-Admiral David Farragut began the assault on Mobile Bay, Alabama. Confederate forces placed pilings and torpedoes (mines) across the entrance to Mobile Bay, forcing ships entering the port to get close enough to Forts Morgan or Gaines to feel the brunt of their guns (Coombe 1999:168). Farragut led 14 wooden ships and four monitors past Fort Morgan early in the morning on 5 August. One of the monitors hit a torpedo and sank, causing a bottleneck under the forts for the other ships. Farragut, damning the torpedoes from his station lashed to the standing rigging of the *Hartford*, heroically led his ships through the minefield and the rest of the fleet followed. After three weeks of assault by both Union Navy and Army divisions, Forts Gaines, Morgan, and Powell were captured, shutting down Confederate movement in and out of Mobile Bay (McPherson 1988:761).

The specific movements of *Narcissus* during this operation have been pieced together from the logs of the USS *Conemaugh* and USS *Stockdale* (de Krafft 1864a:788-790; Edwards 1864:853-857). On 29 July 1864, *Narcissus* captured four refugees near

Petit Bois Island, Mississippi, while awaiting orders related to the impending attack on Mobile Bay. On 3 August 1864, *Conemaugh* sent *Narcissus* to scout for a place to land Major-General Gordon Granger's army troops on Dauphin Island, Alabama. Granger's troops were to shell Fort Gaines while the Union fleet successfully passed the batteries and entered the inner harbor at Mobile Bay (Granger 1864:519-520).

Five gunboats took position to the west of Fort Powell at Grant's Pass: *Stockdale*, *Estrella*, *Narcissus*, *J.P. Jackson*, and *Conemaugh* (Figure 2). These ships were stationed within rifle range to fire their Parrotts and keep the fort gunners' heads down during General Granger's investment of Fort Gaines, and to challenge any strange ships that appeared near the fort (de Krafft 1864b I[21]:503; Coombe 1999:173). The *Jackson*, *Estrella*, *Stockdale*, and *Narcissus* anchored near Fort Powell and opened with a heavy barrage of fire on the fort. Two companies of the 21st Alabama Regiment commanded by Colonel James W. Williams returned fire without much damage. The monitor *Chickasaw* joined the five gunboats and began firing at Fort Powell from the bay, effectively preventing the unprotected gunners inside the incomplete fort returning fire (Williams 1864:560-561). Upon realizing the Union fleet had arrived inside the bay, Williams telegraphed Colonel Anderson, the commander of Fort Gaines, to say he would have to surrender within 48 hours if he could not evacuate (de Krafft 1864b I[21]:503; Williams 1864 I[21]:560). Anderson responded and told him to save his garrison. Colonel Williams then had his acting ordinance officer set a match to the magazine and he and his men evacuated the fort, wading across the narrow channel to Cedar Point on the mainland at low tide (de Krafft 1864b I[21]:503; Williams 1864:560-561).

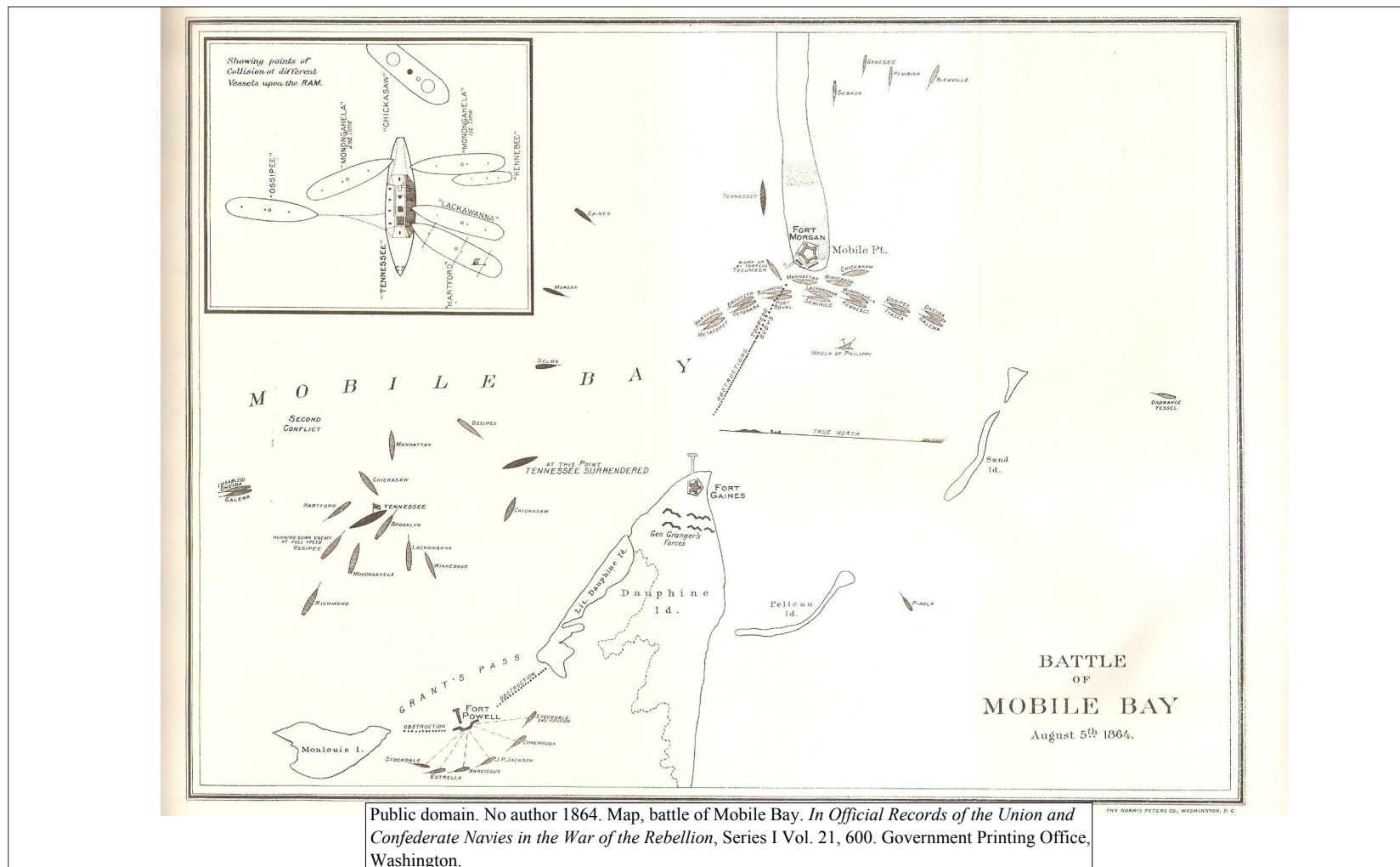


Figure 2. 1864 Map, battle of Mobile Bay. USS *Narcissus* can be seen in the bottom left hand corner near Fort Powell.

### *Explosion*

Following the Union success at Mobile Bay, USS *Narcissus* continued operations in the Mississippi Sound (Farragut 1864o I[21]:624). On 24 August 1864, *Narcissus* captured the sloop *Oregon* in Biloxi Bay. Captain W.G. Jones took the sloop to New Orleans for adjudication so that he could be present for the prize court's ruling (Farragut 1864p, 1864q).

In November 1864, Rear-Admiral Farragut wrote Gideon Welles about Confederate works being constructed at the mouth of two rivers and about recent intelligence stating two Confederate torpedo boats were prepared to attack blockaders at Dog River Bar, Alabama (Farragut 1864r I[21]:717). On 29 November 1864, the *Cowslip* and *Narcissus* were serving in the northern portion of Mobile Bay when they discovered a Confederate camp and battery at the mouth of the Dog River. This battery was likely established to keep the Federal fleet from making their way up the river since many Confederate ships were built upstream in Selma, Alabama. In addition, the commanders of the WGBS had orders to threaten Selma if possible (Halleck 1864 I[21]:721). On 5 December 1864, Farragut received a letter from Gustavus Fox with an enclosure regarding a Confederate torpedo boat constructed at Selma that was en route to Mobile (Fox 1864 I[21]:748). Further, at least four light-draft blockade-runners were in the northern portion of Mobile Bay near Dog River Bar making ready to run the blockade. Jenkins complained to the new Commander of the WGBS, Commodore James S. Palmer, that he needed more vessels to enforce the blockade in Mobile Bay (Jenkins 1864b I[21]:749).

On the night of 7 December 1864, Lieutenant-Commander William W. Low, Commander of the USS *Octorara* and Senior Officer off Mobile, ordered *Narcissus* to conduct picket duty near the obstructions in Mobile Bay and sent an officer to pilot the vessel (Jones 1864 I[21]:752-753). At about 10:30 P.M. *Narcissus* was northwest of the rest of the fleet and anchored in about eight feet of water when a storm came in. Jones stated he feared grounding so he steered the vessel about a mile southeast and anchored in nine feet of water (Jones 1864 I[21]:752-753):

While paying out chain, the vessel struck a torpedo, which exploded, lifting her nearly out of water and breaking out a large hole in the starboard side, amidships, besides doing other damage, causing the vessel to sink in about fifteen minutes. Everything was done to save the vessel, but finding this impossible, I made signals of distress to the commanding officer of the fleet. In the morning the U.S.S. *Cowslip* came up, and all the guns, small arms, ammunition, provisions, etc., were saved. The steam pipe was burst by the explosion and everything was enveloped in steam, driving the men from below, and seriously scalding 1 officer and 3 men. All did their duty faithfully, but I will call your attention to James Kelly, second-class fireman. Fearing that the boiler might explode, I had ordered him below to haul the fires, and this duty he performed, though the fire-room was flooded with hot water, through which he was obliged to wade. He was badly scalded in obeying the order.

The sailors on board *Narcissus* stripped "all her guns, ammunition, small arms, paymaster's stores, nautical instruments, charts and everything movable of any value"

(Canfield 1864 I[21]:793). *Cowslip* unsuccessfully attempted to tow the vessel and then took the crew on board, except Jones and four other men (Canfield 1864 I[21]:793). Jones abandoned the vessel at 8 A.M. the next morning on orders from Lieutenant-Commander Low (Jones 1864 I[21]:753).

Commodore James S. Palmer, Commander of the WGBS, ordered a court of inquiry to investigate not only the cause of the sinking of *Narcissus* in Mobile Bay, but also to determine if Acting Ensign Jones was responsible for discussing the events related to the sinking with a correspondent from the *New-Orleans Era* (Palmer 1864 I[21]:753). Numerous newspaper articles were printed in the North and South regarding the destruction of the "gunboat" *Narcissus* (*Canton Repository* 1864:3; *Daily National Intelligencer* 1864:3; *New Orleans Era* 1864:3; *New Orleans Tribune* 1864:1; *New York Herald* 1864:8; *Philadelphia Inquirer* 1864:1; *Saturday Evening Gazette* 1864:3). According to the articles, on the evening of 7 December 1864, *Narcissus* was opposite Mobile about 300 yards from the obstructions and in close proximity to Confederate rams and picket boats. A heavy gale came up and the vessel moved about a mile out into nine feet of water. After sitting at anchor for about 10 minutes an explosion occurred that caused the vessels to lift five feet out of the water, broke the steam connection pipes, and damaged her machinery (*New York Herald* 1864:8). Jones, who was described as "a brave, energetic and experienced sailor," realized that a torpedo caused the damage (*New-Orleans Era* 1864:3). He organized his men into "bailing and pumping parties" in an attempt to keep the vessel from sinking and firemen were ordered to put out the fires in the boiler room (*New-Orleans Era* 1864:3). Soon after signal flares were shot,

Commander Low arrived in the *Octorara* and received the wounded men. The captain ordered linseed oil be applied to any men who were scalded and Executive Officer C. R. Marple took charge of this action. The *Cowslip* arrived to assist *Narcissus* about three hours after the explosion because the *Octorara* drew too much water to get close. *Narcissus* sank 15 minutes after the explosion occurred, but Jones kept the men bailing and pumping water until *Cowslip* arrived. Damage to the pipes caused the outboard delivery to be open so the ship filled with water quickly. All items on board that could be saved were removed including guns, powder, and all provisions in the hold. All men except Jones, quartermaster A. Brien, boatswain's mate Thomas Butler, coxswain George Moore, ordinary seaman Michael Smith, and a steward, abandoned *Narcissus* and got on board *Cowslip*. Jones applied turpentine to the vessel in case she had to be conflagrated, but the Navy decided to raise *Narcissus* instead. Quarter gunner Samuel Keelan and seaman George Casey were severely scalded. The article stated the "concussion was so great that it sent those who were asleep from the lower berth to the upper ones" and Executive Officer C. R. Marple "could not get out of his room by the door, so he stove the window and got out that way" (*New-Orleans Era* 1864:3).

The court of inquiry clearly stated that the sinking of *Narcissus* was the result of a torpedo (Palmer 1864 I[21]:753). Palmer believed that Acting Ensign Jones "in dictating and causing a letter to be published in one of this city's papers, of so disgusting a character, renders him unfit to hold the position he now occupies in the Navy" (Palmer 1864 I[21]:753). Palmer went on to say, "I do not think persons of this description are worth the time and expense of a trial by court-martial. I hope, therefore, it will be in

accordance with the Department's views to dismiss him from the service" (Palmer 1864 I[21]:753). The naval court of inquiry found "that Acting Ensign W. G. Jones is the author of the communication referred to, and that the same, though mainly true, is unworthy of the pen of an officer or a gentleman" (Welles 1864b I[21]:754). Acting Ensign Jones did not get discharged from naval service, but instead transferred to the USS *Antona* under the command of Acting Volunteer Lieutenant John F. Harden (Jones 1865 1[22]:37). The Navy refloated *Narcissus* and sent her to Pensacola for repair where she remained through May 1865 (Palmer 1864 I[21]:753; Thatcher 1865a, 1865b).

On 9 April 1865, General Robert E. Lee, without supplies and badly outnumbered, signed papers of surrender at Appomattox Courthouse in Virginia, effectively ending the War Between the States. After four years of bloodshed, at last, the Union stood victorious. News of the surrender soon reached the blockade ships and on 29 April 1865, President Andrew Johnson sent a letter from the Executive office lifting the blockade. "Being desirous to relieve all loyal citizens and well-disposed persons residing in insurrectionary States from unnecessary commercial restrictions, and to encourage them to return to peaceful pursuits" all restrictions from "internal, domestic, and coastwise commercial intercourse be discontinued" (Johnson 1865 1[22]:171). This, however, did not mean the Union immediately ceased blockading the southern ports.

*Narcissus* was still undergoing repairs for the first five months of 1865 (Thatcher 1865c, 1865d, 1865e, 1865f, 1865g, 1865h, 1865i, 1865j, 1865k, 1865l, 1865m). Once repairs were completed she was sent back to Mobile where she remained until July 1865 with Acting Master W. Harcourt commanding the vessel (Thatcher 1865m, 1865n). On



10 October 1865, Acting Rear-Admiral Henry K. Thatcher sent a letter to Gideon Welles providing a list of the vessels comprising the Gulf Squadron. In this letter he stated *Narcissus* was ready to be sold and, since the market in Mobile and New Orleans had a plethora of ships for sale, he proposed that *Narcissus*, *Jasmine*, *Althea*, and *Tritonia* had a better chance of being sold up north when the weather permitted the journey (Thatcher 1865o, 1865p). With *Jasmine* leaking badly and Thatcher believing he could sell *Tritonia* locally, *Narcissus* and *Althea* would make the trip alone as soon as the weather permitted (Thatcher 1865p I[21]:262).

### *Final Voyage*

On 2 January 1866, USS *Narcissus* and USS *Althea* cast off from Pensacola, Florida, on their way to New York to be decommissioned and sold (Figure 3; USS *Althea* Deck Log 1866). At 12:00 P.M. the vessels "stood in for land which proved to be the south end of Sand Key" (near Tampa, Florida) and at 1 P.M. they altered their course south-southeast to make way for Egmont Key Lighthouse, which was sighted at 4:30 P.M. (USS *Althea* Deck Log 1866). At 5:30 P.M., *Narcissus* made signal code 403 and came alongside *Althea*. The senior officers of both ships decided not to attempt entering Tampa Bay, but instead to anchor outside for the night. At 6 P.M., *Althea* had less than 12 feet of water under her keel and was heading into the wind when she briefly grounded. With high winds and seas the *Althea* continued to steer northwest, bow into the wind, yet her captain still did not believe it was safe to anchor. At 6:15 P.M., *Narcissus* burned Coston signals, and *Althea*, not understanding the signals, burned the number two Coston. Still having no answer, *Althea* burned Coston signal number 48 at 6:30 P.M. and still did



Public domain. Unknown. [1863]. [Photograph] USS *Althea*, Unknown Accession Number, United States Naval Institute, Annapolis, MD.

Figure 3. The tug USS *Althea* shown here shortly after completion and before entering naval service, circa 1863. No known images exist of USS *Narcissus*.

not receive a response. At 7 P.M., *Narcissus* burned more signals, but the meaning still was not understood. *Althea* burned Coston signal number 222 and received no response. The seas were so rough *Althea*'s commander decided to steam offshore rather than risk the safety of his vessel (USS *Althea* Deck Log 1866). The next time *Althea*'s crew saw *Narcissus*, the vessel was floating, keel up, still attached to her anchors.

William F. Kilgore, Commander of USS *Althea* for the trip to New York, wrote an after-action report to Lieutenant Commander C. C. Hemmings, Commander of the US Steamer *Sagamore*, on 8 January 1866. In this document, Kilgore copied the deck logs from *Althea* and added more information that had not been included in the original logs. According to Kilgore, at 4 A.M. on 5 January 1866, the seas were calm enough for him to bring *Althea* back toward Egmont Key to search for *Narcissus*. At 8:40 A.M., he headed northeast through the narrow South passage toward the Egmont lighthouse and anchored off the wharf. Upon arriving, he noticed the beaches strewn with the wreckage of *Narcissus*, along with papers and pieces of clothing belonging to Acting Ensign Bradbury and Mate John L. Hall. One body had washed ashore, but no one recognized him. They examined Egmont and Mullet Keys as well as the eastern shore of Tampa Bay looking for survivors or more bodies, but did not find anything. Kilgore mentioned all of this information was verbally communicated to Commander Hemmings. "As near as I can tell the US Steamer *Narcissus* was wrecked NW by N distant four miles from Egmont Cay Light House" (Kilgore 1866). Kilgore stated, as far as he could ascertain, nine officers and 24 crewmen were on board the vessel at the time she was lost (Kilgore 1866).

Rear Admiral H. K. Thatcher, Commander of the Gulf Blockading Squadron, sent a letter to Gideon Welles regarding the loss of USS *Narcissus* on 22 January 1866 (Thatcher 1866). He stated *Narcissus* was fitted at Pensacola before she left for New York with USS *Althea*. The commanding officers were instructed to stay near shore in case the weather became unfavorable and they needed to reach a port. The weather was unfavorable when they left and remained so for a week. The Acting Ensign, Isaac S. Bradbury, was deemed an efficient officer and had commanded *Narcissus* for six months before she left for New York. According to Thatcher, before the vessels left, *Narcissus* was considered more seaworthy than *Althea*. His letter essentially restated details presented in the deck logs of USS *Althea* (Thatcher 1866).

On 13 February 1889, William F. Kilgore, the late Acting Ensign of USS *Althea*, sent a letter to the Secretary of the Navy in response to circular number 38, issued by the Navy Department regarding the "Compilation of Naval Records" (Kilgore 1889). Kilgore included this letter with his original letter from 8 January 1866. In his letter, he apologized that his original report was not more detailed, but he felt he had done everything in his power to search for survivors and had not found any. He remembered some of his crew recognizing the body that was found as a fireman from *Narcissus* and burying him on Egmont Key. Soon after they arrived in Tampa Bay, the storm subsided and, once he felt conditions were safe enough to look for *Narcissus*, they did. This was the first time he mentioned actually seeing any portion of the ship besides the debris: "We found about one third of the hull bottom up and held there by her anchors" (Kilgore

1889). They were unable to further inspect the hull or tow it into Tampa Bay because of a strong southerly current (Kilgore 1889).

The Secretary of the Navy traditionally conducts an investigation in almost every case in which a vessel is lost or missing. After such an event occurs, a full report is made by the highest ranking officer who survived the wreck and, if the Secretary of the Navy deems necessary, a court of inquiry is ordered. A memorandum regarding naval ships lost between 1865 and 1903 stated an investigation of USS *Narcissus* was not possible: "The NARCISSUS was lost on the 4th of January 1866, in the Gulf of Mexico. She was a small tug commanded by an Acting Ensign, who was deemed an efficient officer. Was driven ashore in a terrific storm and lost with all on board. No investigation possible" (USNRO [1903]). An investigation likely was not conducted because the commanding officer was noted to be an efficient commander, the weather was bad, and no officers or crew survived for investigation.

Before long, news of the loss of United States Steamer *Narcissus* reached the northern periodicals which published details about the event (*New York Herald-Tribune* 1866:5; *New York Times* 1866:8). One specific article published on 4 February 1866 claimed to have "further details from Ensign Lannan" who sailed to New York from Key West on the steamer *Newbern* and brought with him the news of the demise of *Narcissus* (*New York Times* 1866:8). According to the article, when the vessels hailed each other on the evening of 4 January 1866, Captain Bradbury suggested they anchor both vessels outside the harbor for the night. Both captains agreeing, Captain Kilgore then proposed they move out into deeper water to anchor where they would not have to risk breaking

waves in the shallow water. Captain Bradbury agreed, but by the time they finished this discussion the wind and current had shifted and both ships were headed toward the shoals. *Althea* immediately headed northwest against the wind and tide and, on the way out of the littoral grounds, came over a wave and landed on top of a sandbar with full force, but luckily drifted off without too much effort. *Narcissus* took the easier and more treacherous route straight to the west, feeling the brunt of the wind and tide on her starboard side as she was forcefully driven onto the shoals. *Althea*, continuing on a northwest heading, struck another sandbar and struggled against the force of the waves to free herself from the shoal. Utilizing her engine power, *Althea* eventually gave way and pushed on to deeper water. Just as she broke free, Captain Kilgore noticed a signal from *Narcissus*. He could not understand the signal's meaning and answered with a signal asking if *Narcissus* was in danger. After receiving no response, the crew of *Althea* watched as *Narcissus* "was seen to disappear, break up, and pierce the foaming waters, carrying with her, her precious freight of human life" (*New York Times* 1866:8). The next day, the crew of *Althea* found the body of one of the fireman and the hat of the Captain (*New York Times* 1866:8).

In order to understand how many men were on board USS *Narcissus* on 4 January 1866, the author compared the Navy Bulletin published in the *New York Herald-Tribune* on 6 February 1866, the report made by Acting Ensign William F. Kilgore on 8 January 1866, and the final muster role (USS *Narcissus* Muster Roll 1865; Kilgore 1866; *New York Herald-Tribune* 1866:5). Eight officers died including Acting Ensign Commanding Isaac S. Bradbury; Acting Ensign and Executive Officer Charles C. Dunbar; Mates John

L. Hall and Francis A. Case; Acting Second Assistant in charge F. R. Shoemaker; Acting Third Assistants Edward A. Hopkins, Joshua Halsall, and George Anderson. The crew consisted of the deck department and the engineering department. The deck department included seamen William Thomas, Branton Scoble (spelled Scobel in Navy Bulletin), Columbus Williams, and John Jones; Cooks Jacob Chism (ship's cook, spelled "Chisholm" in the Navy Bulletin), John Hamilton (Steerage Cook), and John Ross (U.S. Cook); Second Master Henry Smith; and landsman James Burns. The engineering department included: 1st Class Fireman Eugene McSorley; 2nd Class Firemen John Donnelly and William Wilkinson; and Coal Heavers John Chrystal, George H. McGuire, Daniel Dwyer, John Kennedy, Barney Sheridan, and James Heenan. In all, 26 men perished when *Narcissus* wrecked near Egmont Key on that cold day in January 1866 (USS *Narcissus* Muster Roll 1865; Kilgore 1866; *New York Herald-Tribune* 1866:5).

There is no extant documentation that the USN attempted any salvage operations on the remains of *Narcissus*. Despite the important role *Narcissus* played in the Union's victory, her resting place was essentially forgotten until two recreational divers found the vessel's remains in the 1980s.

CHAPTER III  
HISTORY OF THE SITE OF USS *NARCISSUS*: SALVAGE  
TO ARCHAEOLOGICAL INVESTIGATION

Salvage operations conducted on the site of USS *Narcissus* during the 1980s involved the illicit removal of artifacts and human remains, and disturbed the site to such an extent as to preclude any proper archaeological investigation and analysis. Public records and personal communication provide information related to at least one known illegal salvage operation that involved an application for a salvage permit from the State of Florida and a successful attempt to arrest the site in Federal Admiralty court. An associate of the salvors provided a report to the State of Florida that documented the history of salvage at the site, an inventory of the artifacts removed, and a sketch map that shows the site as it was prior to and during salvage operations. This material provides a means to understand how the salvage operations affected site formation processes, the lack of cultural material on site, and whether unrecorded salvage actions have occurred since the original salvage operation disturbed the site.

In 1983, a recreational diver named Carl Leer located the site of USS *Narcissus* while diving off the coast of Tampa, Florida. At the time, Mr. Leer did not know what type of vessel remains he had located or the ship's identity. He immediately contacted his



friend and fellow diver, George Cox, and together these divers used "aluminum blade displacement blowers" to remove sediment and recover artifacts from the site (Florida Division of Historical Resources, Bureau of Archaeological Research Application for Historic Shipwreck Exploration or Salvage in Florida Waters 1987; *Treasure Magazine* 1988 19[10]:6-10; Howard B. Tower, Jr. 2006, pers. comm.; Appendix B). The exploration and salvage of the site continued from 1983 to 1987. Some of the artifacts recovered included "iron shackles and handcuffs, brass keys, a silver fork engraved 'Landis,' a solid shot about 3 ½ in. es in diameter, percussion rifles, brass spikes, brass sheathing, a battered copper oil can, an assortment of brass valves and a Confederate brass belt buckle" (Tower 1992:61). Divers took a number of artifacts to a hospital for X-ray analysis and a bone recovered from the site was identified as a human foot bone. These divers believed they had found a blockade-runner, *Landis*, and sought the assistance of salvage operators to assist them with a large-scale recovery of the site (*Treasure Magazine* 1988 19[10]:6-10; Howard B. Tower, Jr. 2006, pers. comm.; Appendix B).

On 26 August 1987, Carl Leer applied for a salvage permit with the State of Florida's Division of Historical Resources, Bureau of Archaeological Research (Carl Leer 1987). In this application, Mr. Leer stated that the only shipwreck remains visible at the site included the propeller, wooden keel, and steam engine (Florida Division of Historical Resources, Bureau of Archaeological Research Application for Historic Shipwreck Exploration or Salvage in Florida Waters 1987). On 20 November 1987, World Treasure Finders, Inc., out of Vancouver, British Columbia, arrested an

unidentified wrecked and abandoned civil war-era vessel, her boats, tackle, apparel, furniture, and furnishings, equipment, engines and appurtenances from the United States District Court for the Middle District of Florida Tampa Division Admiralty Court with Carl Leer acting as the substitute custodian (Howard B. Tower, Jr. 2006, pers. comm.; Appendix B).

In October 1988, two articles appeared in *Treasure Magazine* discussing the salvage plans for the unidentified civil war-era vessel. The first article was included in the "editor's desk" section of the magazine and included information passed along to the editor from Mr. Charles Harris. According to this article, Mr. Harris indicated that Skip Mayorga of Mayco International, Inc., was hoping to raise \$50,000 that could be added to the \$20,000 already accumulated by George Cox's World Treasure Finders, Inc., to conduct a full-scale salvage of the site (*Treasure Magazine* 1988 19[10]:3). Readers of *Treasure Magazine* (1989 19[10]:3) were encouraged to participate by becoming a partner and contributing funds toward the project. The article stated that as a partner, the investor would receive a "guaranteed grade one...8 reale coin recovered from the *Atocha* for each \$1,000 invested" (*Treasure Magazine* 1988 19[10]:3). After recovery was completed, partners would have the choice of receiving the coin, a percentage of the recovered materials, or the monetary value of the recovered materials. The article does mention that a percentage of the findings would go to the State of Florida (*Treasure Magazine* 1988 19[10]:3).

The second article about the unidentified civil war-era vessel in *Treasure Magazine*, entitled "Staffer Called in to I.D. Mystery Ship," discussed the proposed

excavation of the site. George Cox would serve as the project director. He was the vice president of World Treasure Finders, Inc., the owner of Sea Salvage International, Inc., and had conducted salvage work with Mel Fisher. The archaeological excavation would be directed by Duncan Mathewson III, who served as the archaeologist for Mel Fisher's *Atocha* project. Apparently, Skip Mayorga, a relic hunter from Arkansas, created Mayco International, Inc., specifically to finance the salvage of the "blockade-runner" site. According to the article, one of the eight in. brass valves recovered from the site appeared to show "signs that it was severely beaten upon with a large sledgehammer," which the author believed could have been the reason for the boiler explosion – a stuck valve (*Treasure Magazine* 1988a 19[10]:10).

This article continues to discuss problems that had already occurred with the fundraising portion of the salvage project. In June 1988, Skip Mayorga stated the project had been cancelled. Apparently, two or three years earlier, two companies, Tesora U.S.A. and Tesoro, Limited, raised about \$800,000 to fund the salvage of a number of Spanish galleons in the British West Indies. Unfortunately for the investors in the project, it turned out the ships they were to salvage did not exist. Mr. Mayorga had just learned three of the officers from World Treasure Finders, Inc., were part of the Tesoro project. About \$600,000 in funds had been misappropriated by members of Tesora U.S.A. and Tesoro Limited and legal proceedings were being taken against members of these companies, including three people who were also officers in World Treasure Finders, Inc. According to the author of the article, World Treasure Finders, Inc., was in the process of being reorganized and the project would be temporarily canceled. Recovery would be

conducted by Sea Salvage International, Inc., the company owned by George Cox, at a later date (*Treasure Magazine* 1988a 19[10]:6-10). However, these organizations were never restructured to work on the site of the still-unidentified vessel (Howard B. Tower, Jr. 2006, pers. comm.; Appendix B).

Before these articles appeared in *Treasure Magazine*, Carl Leer, Don Young, and Howard Tower formed a partnership to conduct an excavation of the site. Mr. Tower had worked on projects with Florida's State Archaeologist at the time, Dr. James Miller, and wanted to make sure the site was archaeologically recorded and the proper permitting was in place with the State of Florida before any salvage occurred (Howard B. Tower, Jr. 2006, pers. comm.; Appendix B). Mr. Tower dived the site in July 1988 and conducted a general survey, mapping the exposed shipwreck remains, and wrote a report for the State of Florida (Tower 1988a:1-3). Mr. Tower's report evaluated the condition of the site and stated an engine, propeller, and propeller shaft, as well as boiler pieces, were extant above the sediment. The engine appeared intact, although the report states the cylinder was buried in the sand. In addition, the survey states the propeller shaft was missing between the shaft log and the engine and does not mention the pillow block bearing. The fact the engine cylinder was buried and the pillow block was not mentioned suggests that most of the site was likely covered with sediment during the time the evaluation was conducted. However, Mr. Tower does mention ceiling planking, a frame, and exterior planks protruding from under the engine and flywheel. He measured the ceiling plank at 9 ½ in. wide and 2 in. thick. He also mentioned observing "mun[t]z metal, brass spikes...trunnels and copper drift pins" (Tower 1988a:3). This report also contained a

two-page list of artifacts recovered during the previous salvage operation, although Mr. Tower did not recover any artifacts during his dive (Tower 1988a:2; Howard B. Tower, Jr. 2006, pers. comm.; Appendix C). The list of artifacts recovered between 1983 and 1988 are the only artifacts ever recovered from the site and remain in the possession of Mr. Leer and Mr. Cox (Tower 1988a:1-3; Appendix C). Mr. Tower, Mr. Leer, and Mr. Young applied for a salvage permit from the State of Florida in July 1988, but the permit was denied in April 1989 because the site lies within the Pinellas County Aquatic Preserve. Mr. Tower's continued interest in the site led him to discover historical information in the *Official Records of the Union and Confederate Navies in the War of the Rebellion* that enabled him to identify the site as that of USS *Narcissus* (Tower 1992:60).

#### Previous Archaeology

Espey, Huston, and Associates, Inc., conducted a remote sensing survey of the Egmont Shoals Borrow Area in 1988 in order to identify any proposed borrow areas that could impact potentially significant submerged archaeological resources. Out of the 34 magnetic targets identified, 20 of those anomalies generated signatures characteristic of potentially significant sites and were recommended for further investigation (Morris et al. 2007:12; Watts 2001:33).

In 1999, the Institute for International Maritime Research (IIMR) of Washington, North Carolina, contracted with the Florida Division of Historical Resources and Florida State Underwater Archaeologist Dr. Roger Smith, to locate and identify USN shipwrecks in Florida waters. Archaeologists from IIMR set up the remote sensing survey area based

on Loran coordinates provided by Howard Tower and coordinates from one of the magnetic anomalies found during the survey conducted by Espey, Huston, and Associates, Inc., in order to relocate the site. The side-scan sonar survey relocated the site of USS *Narcissus* and recorded a small portion of the exposed steam machinery (Watts 2001:33-36). Divers and archaeologists mapped the extant portion of the steam engine that included the "engine frame, rod, bell crank, flywheel and an eccentric" (Watts 2001:35).

In 2005, Panamerican Consultants, Inc., contracted with the US Army Corps of Engineers to conduct a diver evaluation of 34 targets in the Egmont Shoals Borrow Area in Pinellas County, Florida. The purpose of the investigation was to determine whether the sites were eligible for the National Register of Historic Places and should be investigated further or completely avoided. One of the targets revisited was the site of USS *Narcissus*, which caused a dipole gamma deviation of +327/-255 for 176 ft. Divers observed the boiler remains and steam pipes and removed a concretion that was photographed and returned to the site. Panamerican suggested *Narcissus* was eligible for the National Register and a buffer zone of 500 ft. was created to avoid damage to the archaeological remains during dredge operations (Krivor 2005:71-74).

#### Archaeology of USS *Narcissus*

In 2006, the Florida Aquarium received a matching grant from the Florida Division of Historical Resources to conduct the Tampa Bay Historical Shipwreck Survey. South Eastern Archaeological Services, Inc., provided overall archaeological direction for

this project, with remote sensing operations conducted by Tidewater Atlantic Research, Inc. The initial field season was designed as a Phase I survey, and was the first year of a multi-year, multi-phase investigation. The Phase I survey targeted areas of high probability, based on a predictive model derived from archival and cartographic research. This project was conducted to create a database of submerged cultural resources in and around the waterways of Tampa Bay, Florida, to promote *in situ* preservation. In addition, any submerged sites listed on the Florida Master Site File located within the permit area were reevaluated to assess their condition. USS *Narcissus* was one of the first sites visited for reevaluation.

The site of USS *Narcissus* lies east-northeast of Egmont Key, along an axis of 60/240 degrees magnetic, near the shipping channel north of the entrance to Tampa Bay, Florida (Figure 4). This site has experienced a tremendous amount of sediment movement resulting from salvage operations, recent dredging activities in the nearby shipping channel, and hurricanes. During previous investigations, the site of USS *Narcissus* was covered by sediments with only a small portion of the engine extant from the seafloor. Upon arrival at the site in 2006, all of the engine, propeller, propeller shaft, shaft log, pillow block, boiler pieces, and a portion of the wooden stern assembly were exposed. As a result, project personnel decided to conduct a non-intrusive archaeological investigation to record the extant features, utilizing The Florida Aquarium's volunteer divers in the process.

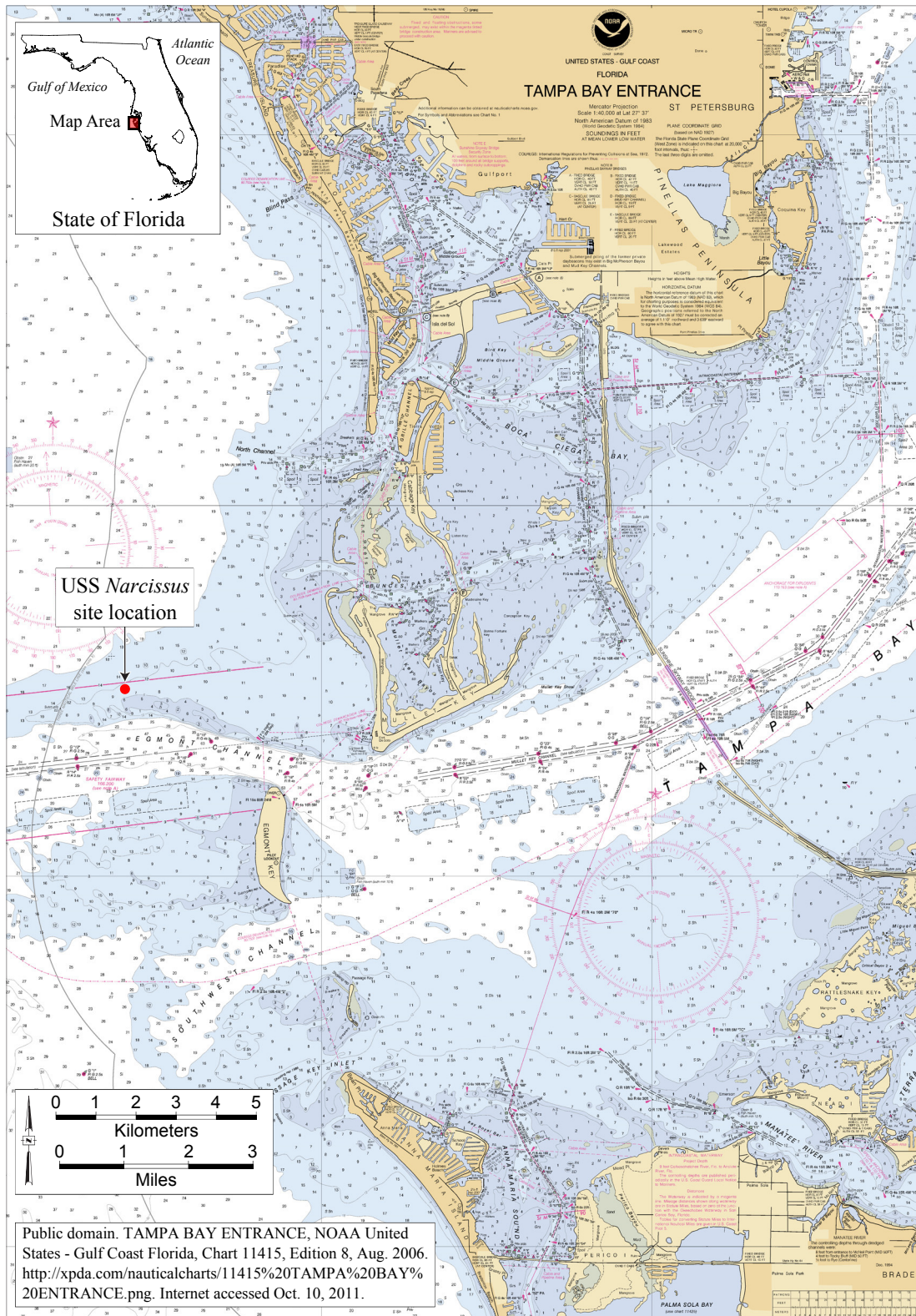


Figure 4. Map of site location, Tampa Bay, Florida.



### *Archaeological Research Design*

The complete recording of the wreck believed to be the USS *Narcissus* was not an initial goal of the Tampa Bay Historic Shipwreck Survey. The original plan involved relocating, assessing, and mapping any changes to the site since 1999. Upon making a reconnaissance dive, archaeologists immediately recognized that more of the vessel was exposed than had ever been accurately recorded. At that point the decision was made to completely record the site with a proper archaeological approach and professional archaeological direction. Although this site had long been claimed to be the remains of the USS *Narcissus*, no truly definitive archaeological recordation had been undertaken to prove this long-cherished theory of treasure hunters, sport divers, and local folklorists.

Goals of the extensive recordation process were to establish the vessel size, machinery type, engine type, boiler type, and vessel construction details. With the site's previous history of salvage, and historical accounts of the ship's violent destruction, little to no material culture was anticipated. Ascertaining the cause of the vessel's loss and the position of the remains relative to the historical documentation were also essential questions to be answered.

### *Archaeological Methodology*

The methodological approach to the multi-year recordation of this site was primarily one of non-disturbance. The second major consideration was the extensive use of volunteers. Even working under the direction of experienced, professional marine archaeologists, volunteers must not exceed their capabilities and tasks assigned should

result in usable data that will support information recorded by the professionals. The last consideration, but by no means the least, was the budgetary constraints and the resulting temporal limitations.

Initial site recordation was accomplished by creating a datum web that could be used to triangulate each extant feature on the site using polypropylene line. Angles recorded from the multiple attachment points to each feature facilitated precise positioning of each feature in the overall site plan (Figure 5). The datum web also provided a guide system for the volunteers and an accurate recordation system for site mapping. Individual site features were recorded in complete relative detail and were treated as features. Recordation of these features was undertaken in such a way as to provide sufficient data for complete reconstructive analysis of the hull, the machinery, and the engine.

Once the web-referenced site plan was completed, the web was removed and a precise centerline baseline of 120 ft. in length was emplaced. This length allowed all extant remains to be included and exceeded the known overall length of USS *Narcissus*. This datum was utilized for positioning transverse sections 10 ft. apart across the buried hull remains. These sections were probed with a 1 in. x 4 ft. hydraulic wand, establishing both extent of the hull remains and depth of depositional sediment across the hull. Both the baseline and the transect lines were leveled and cross-leveled to ensure accurate data acquisition. All features at the site were also referenced and recorded back to the centerline baseline. The initial site plan produced in 2006 was continually updated over

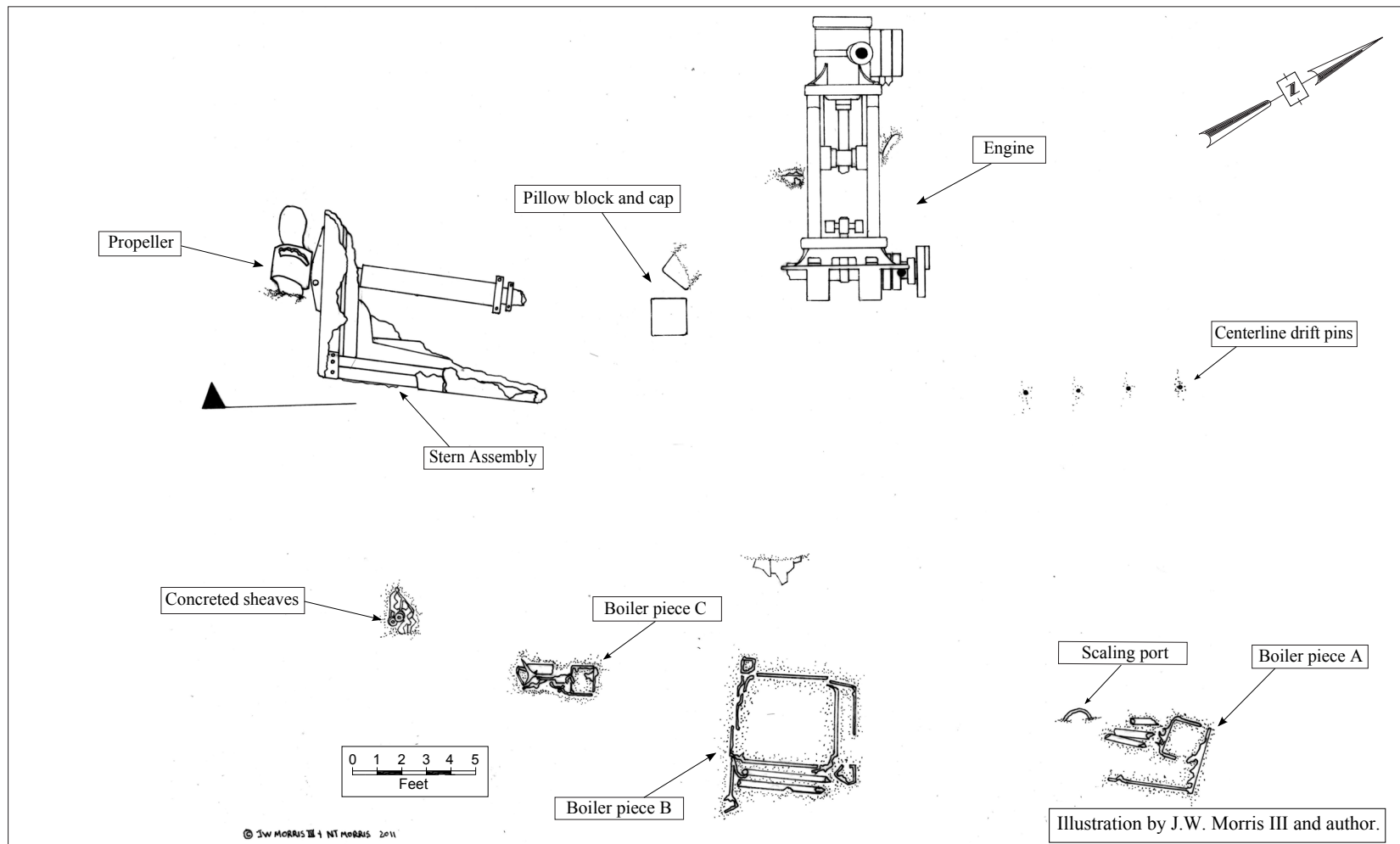
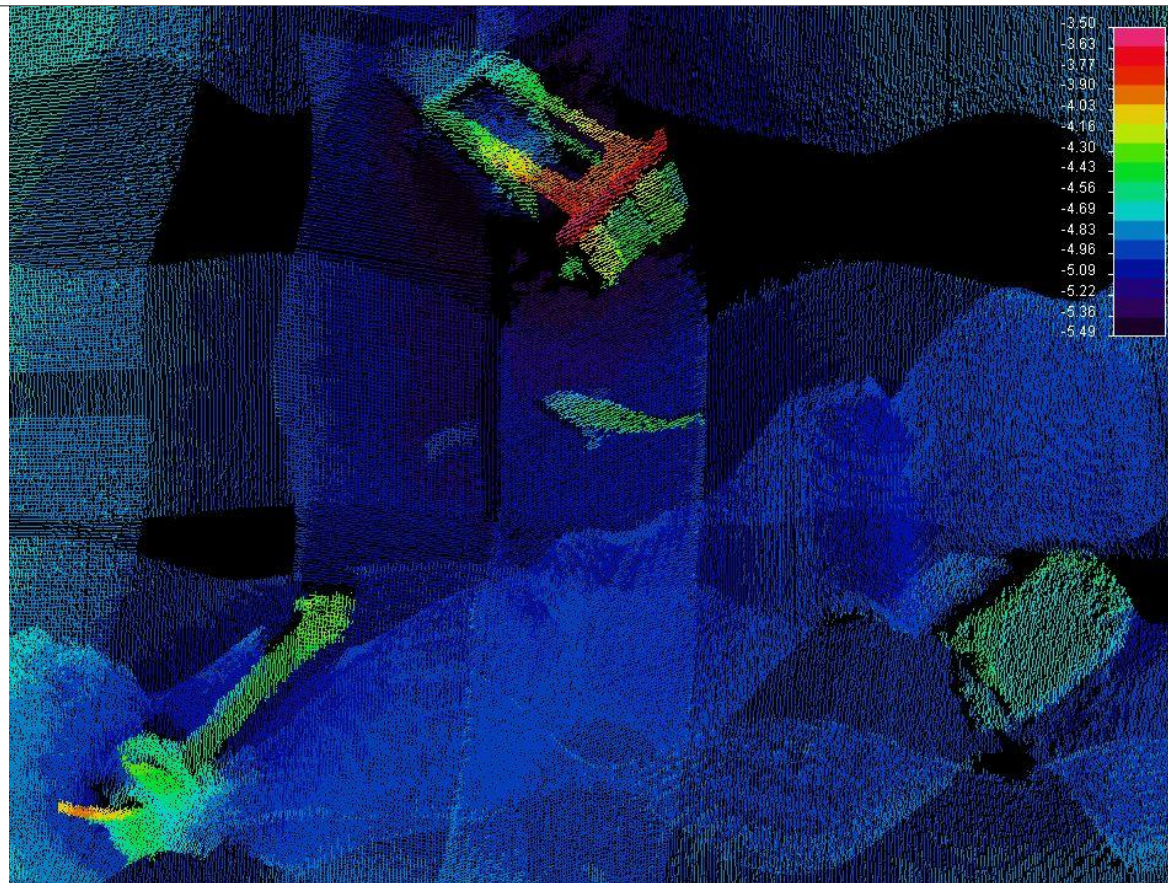


Figure 5. Site plan of USS *Narcissus*: Propeller, Stern Assembly, Shaft and Shaft log, Pillow block and cap, Engine, Centerline driftpins, Boiler piece A, Scaling port, Boiler piece B, Boiler piece C, and Concreted sheaves. The site is littered with fragmented boiler plate pieces and disarticulated hull timbers with copper alloy sheathing still attached.

the subsequent three field seasons to add additional site features as depositional sediment shifted. In addition to the mapping and feature recordation operations, digital photography and video was used to document the site. The Scripps Research Institute also generated three-dimensional sonar imagery (Figure 6). In 2009, IIMR resurveyed the site of USS *Narcissus* with magnetometer and sonar and discovered an anchor that had not been seen previously (Figures 7, 8). Avocational divers conducting a Heritage Awareness Diving Seminar with the Florida Public Archaeology Network and the Florida Bureau of Archaeological Research located this anchor in 2010.

### *Boiler*

One boiler with a single furnace was on board *Narcissus* (USNRO 1921 II[I]:155). Many pieces of boiler remains are scattered around the site, making a catastrophic boiler explosion the most likely reason for destruction of the vessel. All of the boiler pieces are located on the starboard side of the baseline and no boiler remains were found forward of the engine, where it would have originally been located. More boiler remains have been exposed during each site visit due to the incredibly dynamic sediment movement at this site. The forward-most portion of the boiler is labeled boiler piece A and the description will move aft with boiler pieces B and C. The dimensions of boiler piece A are 4 ft.  $\frac{3}{4}$  in. on its northwest side, 3 ft.  $\frac{1}{2}$  in. on its southwest and northeast sides, and 3 ft.  $\frac{1}{2}$  in. on its southeast side. A large opening is located in the center of the piece, 19 in. wide and 27  $\frac{1}{2}$  in. long, which may have been associated with the combustion chamber. Concreted fire tubes still are located on the northeast side of the boiler piece, measuring approximately 3  $\frac{1}{4}$  in. wide and ranging from 8 in. to 10  $\frac{1}{2}$  in.



The Scripps Research Institute 2007. 3D Image of USS *Narcissus*. In *Tampa Bay Historical Shipwreck Survey Final Report*, by John W. Morris III et al., 55. Report to Bureau of Historic Preservation, Florida Division of Historical Resources, Florida Department of State, Tallahassee, from The Florida Aquarium, Tampa, FL. Courtesy of The Florida Aquarium.

Figure 6. 3D image of USS *Narcissus* created using BlueView 1350 sonar and displayed by Fledermaus software package. The depth relief of the objects can be determined from the color-coding key in the upper right corner displayed in meters. The shaft and propeller (bottom left), engine (upper left), boiler pieces (right), and a goliath grouper (center) can be seen in the image.

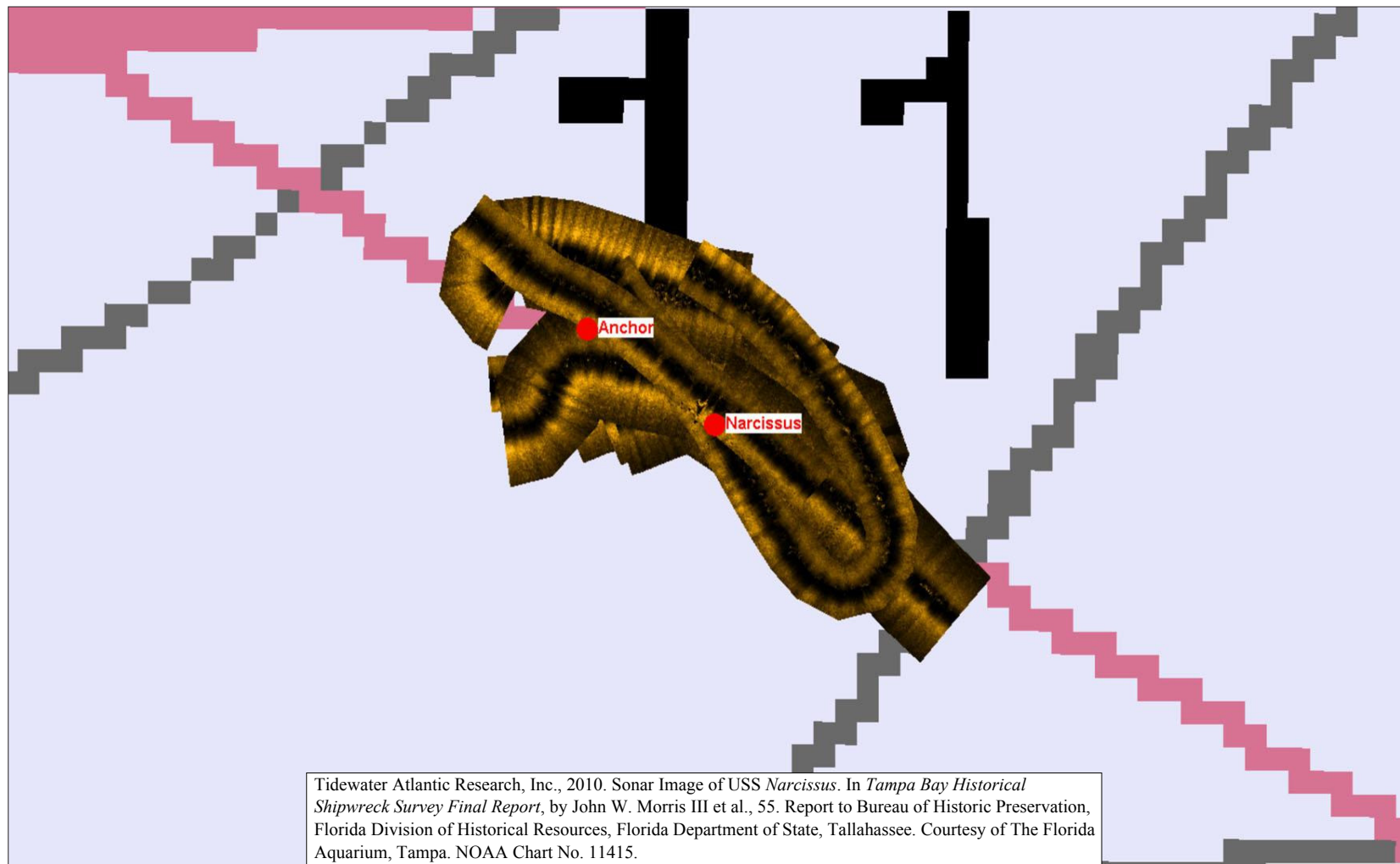


Figure 7. Sonar image showing location of USS *Narcissus* and the anchor.



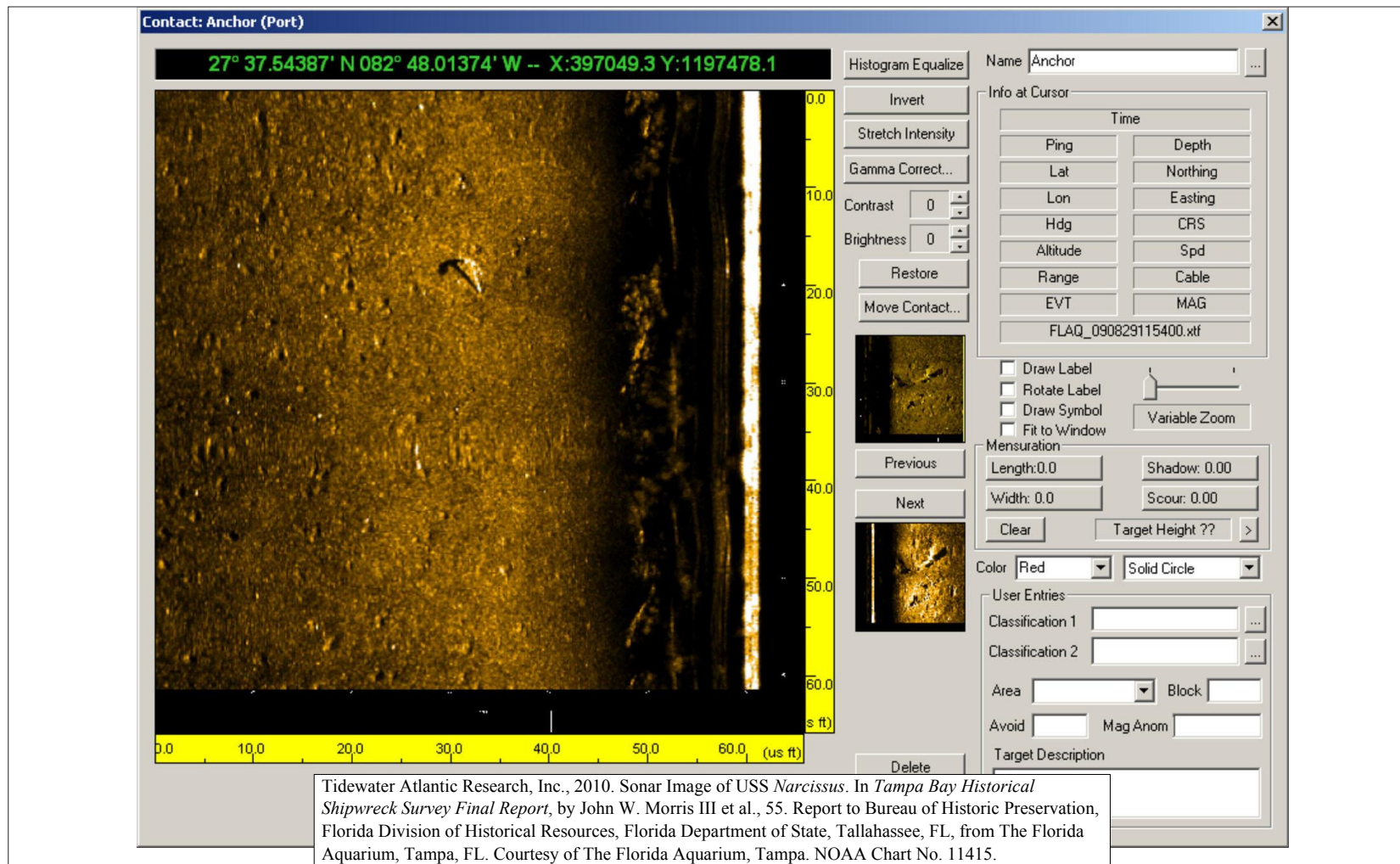


Figure 8. Sonar image of the anchor from USS *Narcissus*.

long. Six spacers, 2 ½ in. thick, are on the southwest side of the boiler piece, indicating a double wall construction. A large metal ring that may have been a scaling port is located 9 in. aft of boiler piece A.

Boiler piece B is 10 ft. 5 in. aft of boiler piece A. There is a space in the center of this piece as well, although its dimensions are wider than the space located in boiler piece A with a width of 52 in. and a height of 41 in. This area may have been part of the boiler furnace since two disarticulated fire tubes run along the northwest side of the boiler piece measuring approximately 4 in. wide and varying from 10 to 26 in. in length.

Boiler piece C is the side of the boiler. During the first field season this piece was predominantly covered with sediment. In the course of subsequent field investigations, shifts in depositional sediment exposed additional firetubes and the aperture for a firebox door. Coal was found near this feature.

### *Engine*

The engine has a cast iron frame and a single inverted or raised direct-acting overhead cylinder (Figures 9). The direct-acting engine enabled boats to have smaller engine rooms and lighter overall weight. According to Robert Murray, "[T]he distinguishing feature of all direct-acting engines consists in the connecting rod being led at once from the head of the piston rod to the crank without the intervention of side levers" (Murray 1858:6). All components of the engine are heavily encrusted with marine growth and the engine has fallen over to port and experienced some damage. The engine would have stood upright and measures 11 ft. 11 in. from the bottom of the engine to the cylinder cap (Morris et al. 2007:83). The measurements for the stroke and bore are 18 in.



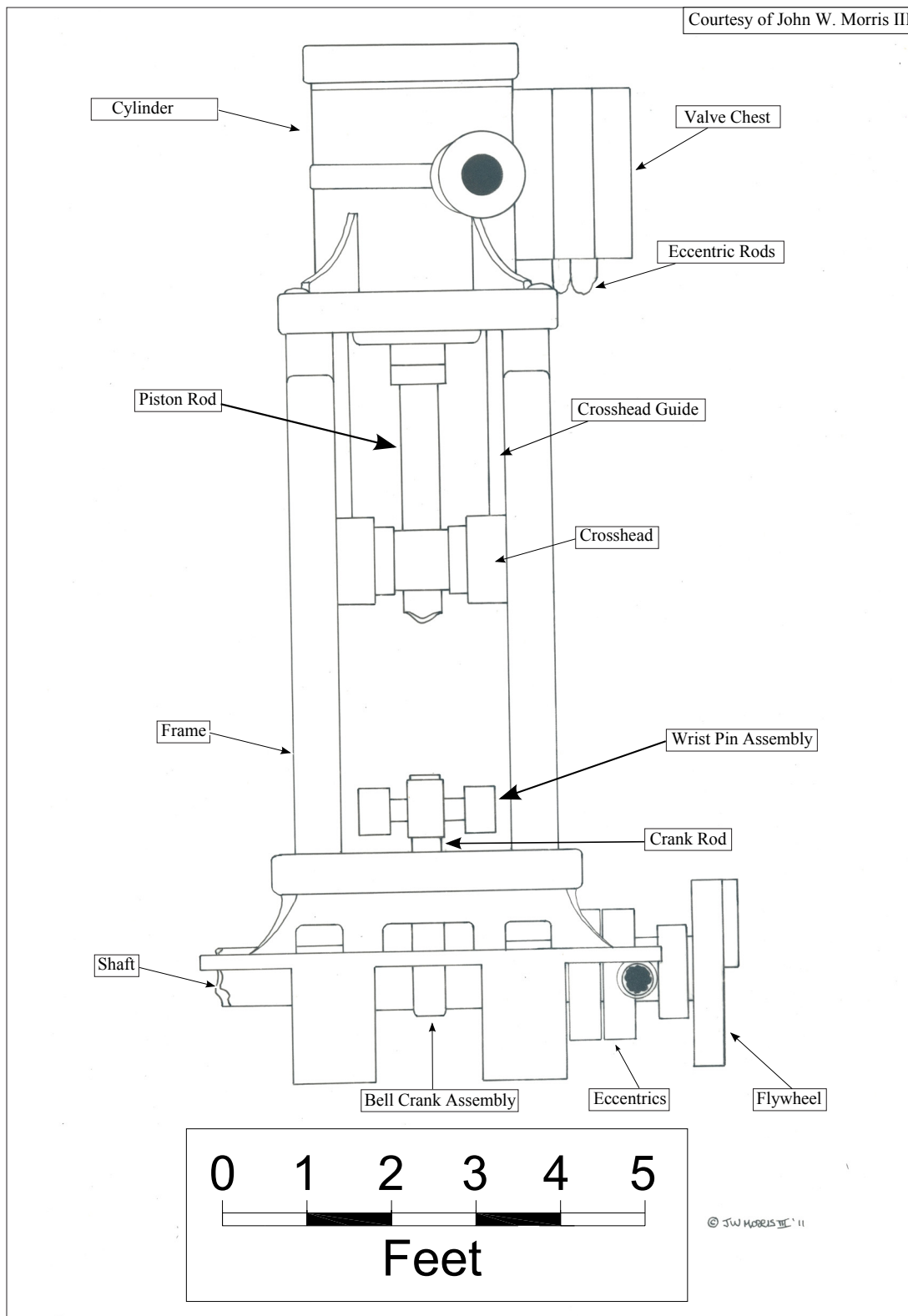


Figure 9. Engine, starboard profile view, USS *Narcissus*

and 16 in., respectively (Morris et al. 2007:82). These values were established by measuring the diameter of the piston and the lengths of the guides for the crosshead slide.

The valve chest is positioned on the forward side of the cylinder on top of the engine frame, with the steam inlet just aft on the starboard side. The connecting rod is broken below the crosshead, which remains in the down position (Morris et al. 2007:82-83). The introduction of screw propulsion required the working parts of the steam engine be placed low in the hull to correspond with the location of the propeller shaft and, in the case of a combatant vessel, to protect this equipment from enemy shot (Murray 1858:17-18). The bell crank assembly is located below the engine frame "in a well created by the engine bed" and the bottom of the connecting rod is still attached to it (Morris et al. 2007:83). A turning wheel with offset counter weight is 24 in. in diameter and 2 in. thick and is located forward of the bell crank assembly attached to the forward end of the propeller shaft. The shaft continues aft through the base of the engine and runs through a two-piece block that is bolted together to help control shaft vibrations. Although the propeller shaft remains in the bed of the engine, the shaft is broken 9 in. aft of the base of the engine resulting from damage that occurred either during or after the wrecking event (Morris et al. 2007:82-83).

A pillow block bearing was located 5 ft. 3 in. aft of the engine. The propeller shaft would have passed through the pillow block bearing on its way from the engine to the propeller to help support the weight of the shaft while still allowing for shaft movement. The pillow block bearing is upright on the seafloor, rising 2 ft. 7 ½ in. above the sediment and is 2 ft. 6 in. wide. The shaft bore rises 7 ½ in. above the shoulders of the block and

the inner ring of the shaft bore is 6 in. wide. The cap that should have covered the pillow block bearing is missing (Morris et al. 2007:86-87).

### *Stern Assembly*

The stern assembly is 9 ft. 8 in. behind the engine and is leaning to port. It is comprised of the sternpost assembly, the stern knee, the keel and keel rider, deadwood, and the remains of the propeller, shaft seal, shaft log, propeller shaft, and stuffing gland (Figure 10). The outer sternpost is 13 in. sided, 15 in. molded, and the inner post is 12 in. sided, 7 in. molded. This assembly creates the rising rabbet by the differences in the sided dimension of the inner post and outer post. This enables the hood ends of the exterior hull planks to be securely affixed to the stern vertical. A copper alloy fishplate secures the stern post assembly to the keel and keel rider. The stern knee and deadwood are 9 in. sided and also help support the stern posts. The stern knee is on top of the keel rider, which is 12 in. sided and 6 in. molded. The keel is also 12 in. sided and 6 in. molded and has the forward remains of a heavily encrusted skeg plate. All of the wooden stern assembly components are fastened together with 1-in. iron pins. No remains of hull planking were seen on the stern assembly, but ½-in. iron pins were visible in the rising rabbet. The stern post assembly and keel are covered with remnants of copper alloy sheathing and ¼-in. copper alloy tack nails (Morris et al. 2007:84-84).

The four-bladed, cast-iron propeller likely suffered damage in the wrecking event, as only the top blade on the port side of the wreck site still remains intact. The top blade on the starboard side is missing and the other two are buried under the sediment. The bottom blade on the port side is bent forward and the bent portion is slightly extant from

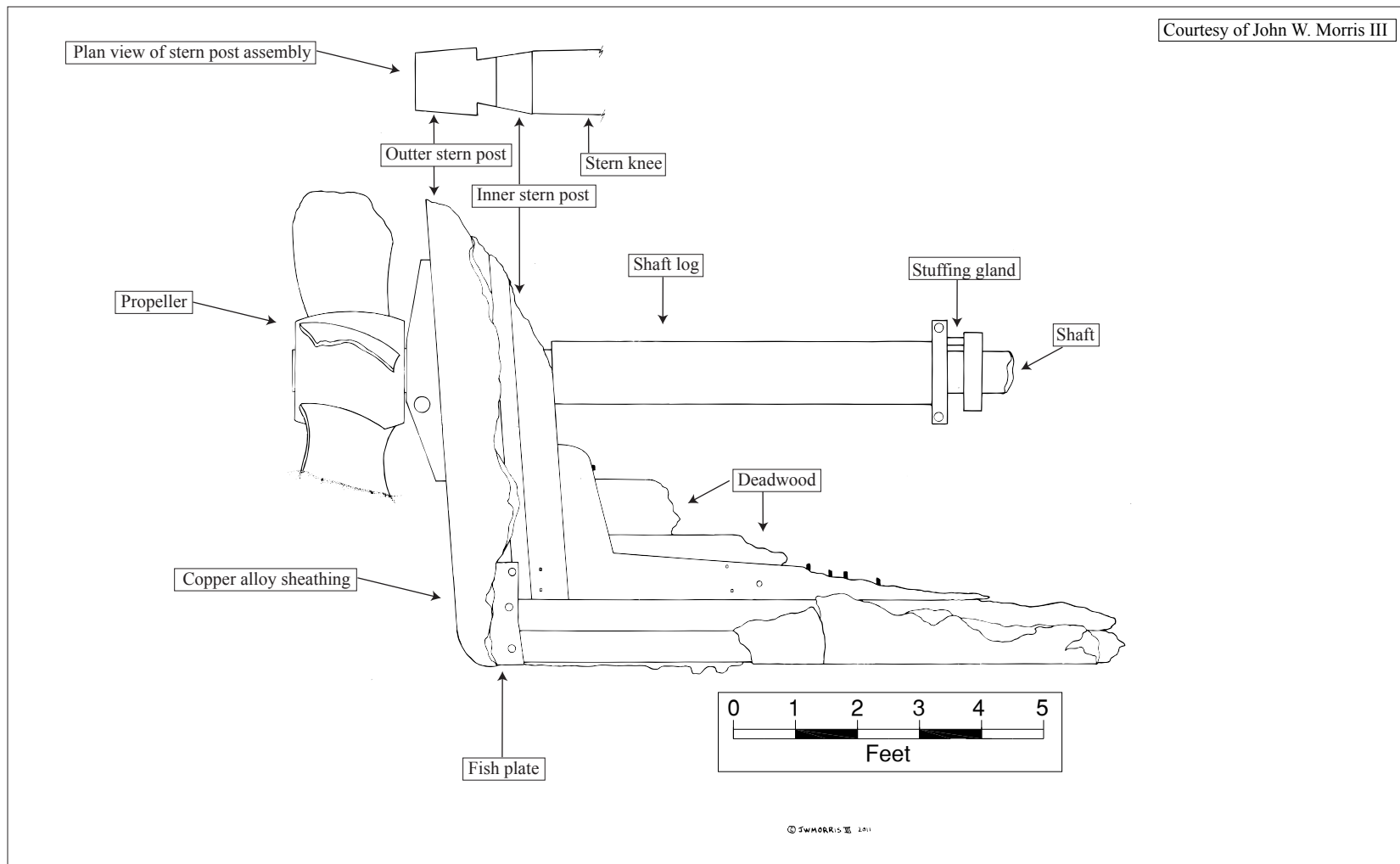


Figure 10. Stern assembly, starboard profile view, USS *Narcissus*.

the sediment. The hub diameter is 24 in. and is heavily encrusted with marine growth. The blades are approximately 3 in. thick, 2 ft. 3 in. long, and are 1 foot 10 in. wide at the base tapering up to 10 in. at the top.

The propeller is still attached to the propeller shaft, which runs through the sternpost assembly after first passing through the copper alloy shaft seal which is affixed to the after molded surface of the outer post. The shaft then runs forward through the shaft log that covered and protected the shaft. The shaft log is 10 in. wide and measures 9 ft. 8 in. from the forward portion of the propeller hub to the forwardmost portion of the shaft. The shaft is 6 in. wide and is severed 5 in. forward of the shaft log. The shaft does not appear anywhere else on site except in the crankshaft located in the engine bed. The forwardmost portion of the shaft log has the remains of two couplings approximately 4 in. wide and 2 in. thick and spaced 4 in. apart. This assembly is the remains of the stuffing gland (Morris et al 2007:85).

### *Buried Hull Structure*

The site was probed in transects every 10 ft. along the 120 ft. centerline baseline to establish how much of the hull remains were still present beneath the depositional sediment. Buried hull remains run under the stern assembly on both the port and starboard sides and continue under the engine. No additional hull remains were encountered until 51 ft. in front of the engine on the starboard side. The only additional wooden hull structure encountered during the recordation process was the remnants of one hull plank, 6 in. wide and 3 ½ in. thick sheathed with a copper alloy, immobilized

under the engine. The remnants of a double block, part of the relieving tackle, are located within a concretion on the starboard side of the engine (Morris et al. 2007:86-87).

#### Recommendations for Future Research

Although USS *Narcissus* was severely damaged during the wrecking event and modern salvage operations, much of the shipwreck remains to be studied. Recent investigations of the site have revealed the exposure of a significant amount of additional material. Lower hull remains, several sections of the destroyed boiler, segments of the chimney shroud, and several pieces of smaller associated material culture have been observed. Due to the sensitive nature of this site as a war grave, any further work should be confined to in situ recordation. *Narcissus* has been nominated to become a State of Florida Underwater Archaeological Preserve to serve as a physical reminder of the past. As the only USN blockade ship thus located in Florida waters, the site will allow recreational divers to experience a civil war-era shipwreck first hand and understand more about the maritime heritage of Florida.

## CHAPTER IV

### ANALYSIS AND CONCLUSIONS

This historical and archaeological study of USS *Narcissus* assessed how political and economic pressures experienced by the USN during the ACW directly affected the Union's naval strategy and thus the decision to purchase specific types of vessels for use in the blockade. The results of this analysis validated the theory that the functional design and economic value of the screw-propelled tugboat led to the purposeful purchase of these vessels to serve as shallow-water blockade vessels and support craft. The archaeological investigation allowed archaeologists to identify this tugboat as the USS *Narcissus*. Specific measurements of the engine and hull remains allowed researchers to conclude that this type of vessel had an economical propulsion system and shallow draft that would have been best suited for a blockade ship in shallow water. Finally, an analysis of the historical and archaeological evidence enabled the author to suggest possible explanations for the catastrophic explosion that led to the demise of USS *Narcissus*.

An analysis of *Narcissus*' history allowed the author to examine the site from both a diachronic and synchronic perspective. The design of the tugboat emerged out of necessity as steam technology became a common component of maritime commerce. The infrastructure of ports, rivers, and wharves, as well as the commodities of trade and commerce, encouraged boat builders to design a steamboat that would more easily move ships and boats in and out of ports (Gould 2000:238). Initially, in addition to moving

ships into and out of berthing locations, most towboats worked part-time as freighters and passenger ferries that relied on carrying cargo and passengers. This occurred because maritime commerce businesses were not at first convinced that steam towing would be profitable. After *Gibbons v. Ogden*, the nation's rivers and ports were free and open for expanding travel and trade; as a result, shipping costs dropped and cities and ports in upland areas grew. As this riverine commerce expanded, tugboat design became highly specialized.

These developments enabled the general-purpose hull design of steam towboats to evolve into a design-dedicated hull based on economic functionality and task specific requirements. The operating environment required maneuverability once tugboats separated the cargo-hauling vessel from the power source. Tugs began towing "on the hip" and increased power by adding additional engines, dropping the use of sails, refining the bow, rounding the midship, and increasing the draft to compensate for the propeller. The development of towing "on the hawser" caused passenger accommodations on board the tugs to disappear so the stern could be clear for a clean sweep while towing. The compound engine increased the efficiency of steam tugs, providing more deck space and decreasing both the number of coal handlers and days of travel since fewer coaling stops were required. Tugboats were now designed to operate as machines of function (Muckelroy 1978:3).

At the outbreak of the ACW, the proclamation of blockade meant that a permanent coastal interdiction force had to be established along approximately 3,000 miles of southern coastline. The technologically outdated USN immediately purchased civilian mercantile marine vessels suitable for naval duties. Many ships purchased were



large, deep-draft sailing vessels. Just days after the proclamation of blockade was announced, Gideon Welles knew the USN would need shallow-draft steamers. This is demonstrated in his letter to Samuel DuPont, the Commandant of the Philadelphia Navy Yard, when he asked DuPont to purchase steamers with a ten to twelve foot draft, paying particular attention to the vessel's strength, speed, and ability to carry a 9-inch pivot gun (Welles 1861:56). Even early in the ACW, naval commanders knew that the most effective blockade-runner would be a fast, light-draft ship.

Civilian tugboats, initially purchased out of economic, political, and functional necessity due to the strains of the ACW, proved to be extremely effective for a variety of mission-specific demands. This is apparent in Samuel F. DuPont's comments once he became the commander of the North Atlantic Blockading Squadron. His letter to Gustavus Vasa Fox referred to the "blessed ubiquitous tugs" that could be armed with howitzers and guns "and off they go...no estimate can be placed on their value here-we have managed to repair them in turn, and they have paid for themselves ten times over" (DuPont 1862). Farragut believed *Narcissus* and similar vessels worked "very well as tugs, [and] did not cost half as much as any one of those steamers" proving that tugs were not only economically viable, but perfect light-draft steamers for inshore blockade operations (Farragut 1864h I[21]:377). Social, political, and economic pressures forced the USN to purchase and equip for war tugboats originally designed to aid maritime commerce. The versatile design of tugboats enabled these watercraft to successfully perform inshore operations while on blockade duty.

An analysis of the tugboats purchased and built between 1861 and 1866 validated the comments made by USN commanders. Screw-tugs became an integral component of

the evolving tactics of the blockade. As discussed previously, the USN purchased 7 screw-propelled and 7 sidewheel tugboats in 1861. This confirmed the hypothesis that in the early stages of the blockade strategy, the method of propulsion did not seem to be significant. Tugboats were purchased simply to serve in a traditional sense. Yet, an examination of the number of tugboats purchased in succeeding years clearly demonstrated the key role screw-tugs played in the blockade strategy. By 1862, 10 screw-tugs and only 4 sidewheelers were purchased. In 1863, the number of sidewheelers purchased declined even more as only 5 were purchased compared to 30 screw-tugs. In 1864 and 1865, no sidewheel tugboats were purchased while the USN purchased 36 screw-tugs and 7 screw-tugs, respectively. Clearly, one of the most economically and tactically effective shallow-draft steamers utilized on blockade duty was the screw-propelled tugboat.

The history of USS *Narcissus* demonstrates how the utilitarian nature of a screw-tug contributed to the success of the Union blockade by performing a variety of mission-specific tasks. *Narcissus* functioned as a service vessel, armed combatant, support craft, and tow vessel. David Farragut went to New York with a specific mission, to acquire shallow-draft steamers that he believed would make the blockade more effective and USS *Narcissus* was chosen as one of those vessels (Farragut 1862a:299; Farragut 1863a:338). Thornton A. Jenkins, the Captain Commanding the First Division of the West Gulf Blockading Squadron (WGBS), said the tugs were indispensable for communication on blockade duty (Jenkins 1864b I[21]:750). Gideon Welles referred to tugs as "bar tenders" since they could efficaciously maneuver close to shore and watch for blockade-running movement. *Narcissus* consistently operated in near-shore environments capturing

refugees and Confederates, enemy vessels, salt works, and supplies (Drayton 1864a I[21]:188; Canfield 1864 I[21]:791-794; USS *Narcissus* Service Record 1864; *L'Union* 1864). These operations often required *Narcissus* to advance into shallow waters where no other steamer had gone before (*New Orleans Weekly Times* 1864). *Narcissus* even operated as a gunboat, shelling Fort Powell during the Battle of Mobile Bay. *Narcissus* was on picket duty looking for Confederate torpedo boats when she struck a mine and was severely damaged (Fox 1864 I[21]:748; Jones 1864 I[21]:752-753). The functional design and economic value of the screw-propelled tugboat enabled the purposeful purchase of USS *Narcissus* to achieve tactical success as a shallow-water blockade vessel and support craft.

An examination of the archaeological remains of site 8HI5369 enabled archaeologists to conclude that this site is indeed USS *Narcissus*. This was determined based on the size and condition of the archaeological remains, the engine type and size, the location of the remains based on historical documentation, and the artifacts allegedly recovered during previous salvage operations. Historical documents seem to suggest that *Narcissus* sank from a catastrophic boiler explosion after lodging on a sandbar. The archaeological remains of *Narcissus* still lie on a sandbar and the fragmented nature of the boiler is consistent with a boiler explosion.

The destruction of the vessel resulting from a boiler explosion precluded an exact comparison of the hull remains to the overall length of the vessel as listed in the USN records. *Narcissus*' measurements were 101 tons, 81 feet 6 inches in length, with a beam of 18 feet 9 inches and a depth of hold of 8 feet (USNRO 1921 II[1]:155). When measuring the site, the archaeological baseline was placed on the starboard side of the

stern assembly just behind the propeller in order to be as close to the centerline of the vessel as possible. The baseline extended 120 feet forward to make sure the entire site was contained within the measurement boundaries based on the overall length of the vessel. Just forward of the engine no hull remains were encountered until 51 feet in front of the engine. The boiler explosion explains the lack of hull remains just forward of the engine since that is where the boiler would have been located.

During her naval career, the wooden hull of *Narcissus* experienced numerous strains and impacts that she was not designed to withstand. The cumulative effect of these unanticipated stresses may have contributed to the abrupt end of her career. *Narcissus* was purpose-built as a tugboat for service in and around New York harbor, specifically hired to conduct towing and docking jobs. Following the completion of each task, she would have returned to her berth for on-going maintenance and repair?. While the tasks she was designed for were indeed difficult, she was not designed to maintain operations on a continuous basis. Tugboats on blockade duty, however, were expected to perform their missions day-in and day-out, with no stand-down period at the completion of each mission. These continuous operations alone would have stressed the wooden hull, especially since these ships conducted tasks other than what they were designed to do and often operated in inclement weather.

Wooden steamers like *Narcissus* tended to suffer damage due to the vibrations the steam engine and propeller shaft exerted on their wooden hulls. "Iron was a material far better suited to screw propulsion than wood; for long and strenuous ocean voyages, the evolving screw propeller required the tensile strength of an iron hull" (Graham 1956:75). Over time, the stress increased hogging from the weight of the heavy engines and boilers.

In addition, propeller shafts were known to become incorrectly aligned during severe weather and while at dry dock or in tidal berths due to the stress on the hull. It happened so frequently that crews commonly loosened the bolts that secured the engine to the bedplate when the vessel was at dry dock or at berth (Thiesen 2006:91). In a letter to Gustavus Vasa Fox, Admiral Louis M. Goldsborough described how the blockade vessels suffered damage to their wooden hulls from the recoil of their guns: "... [t]he firing of our heavy guns on board of our frail vessels is making their very timbers yawn, and then leak more and more" (Goldsborough 1862). Over time, vibrations from the iron machinery and the recoil of the guns only added to the stress *Narcissus'* wooden hull experienced from maintaining continuous blockade operations.

The substantial damage *Narcissus* suffered from the torpedo in Mobile Bay, Alabama, created even more stress on her wooden hull. The torpedo "exploded, lifting her nearly out of the water and breaking out a large hole in the starboard side, amidships, besides doing other damage" (Jones 1864 I[21]:752-753). Commander Jones stated the explosion in Mobile Bay caused a steam pipe to burst and the fires in the boiler were quenched because there was fear the boiler might explode (Jones 1864 I[21]:752-753). A similar experience may have occurred when *Narcissus* was finally lost, the only difference being the fires were not suppressed in time. *Narcissus* was repaired after the explosion in Mobile Bay, but this type of damage severely compromised the structural integrity of the hull. This damage made *Narcissus* more susceptible to the stress caused by grounding on a sandbar during a storm. The weak structural integrity of the hull possibly enabled water to enter the ship and reach the boiler, causing the boiler explosion. This may have been what *Narcissus'* Coston signals were trying to communicate the

night of her demise. However, since *Althea*'s crew was unable to understand the signals, this question will remain unanswered.

Boiler explosions were common during the 19th century and many reasons could account for *Narcissus* suffering this disastrous event. First, steam propulsion was still a relatively new technology and many boilers were made of low-quality materials. Boilers under full pressure were often "seen to pant in and out as the internal pressure undulated with the rhythm of the engine" (Matteson 2005:35). Early boilers that used water from surface condensers experienced rapid decay from saponification. Crews used heated tallow and vegetable oils that were carried into the boilers by the feed-water for internal lubrication, but this process also led to corrosion of the boiler plates and stay that destroyed them (Sennett 1902:128). This saponification intensified when superheated steam was used in the boilers (Sennett 1902:128). The most serious form of saponification decay resulted in pitting of the iron plating (Sennett 1902:128) Boilers already damaged from normal use were abused on blockade duty.

Uninterrupted blockade operations did not allow crews the opportunity to adequately maintain their ships' boilers. Further, tugs on inshore operations commonly used brackish water in their boilers because of lack of access to fresh water, which caused severe damage (Matteson 2005:71). The combination of poor maintenance and the use of brackish water caused the boilers to clog with salt scale and triggered chemical reactions that led to elevated water temperatures in the boiler and an increased risk of explosion (Graham 1956:83). Sea water utilized at high temperatures allowed chloride of magnesium contained in the sea water to decompose and release hydrochloric acid. In addition, warships on ordinary service typically operated at slow speeds using "from one-

fifth to one-twentieth their full power" (Sennett 1902:129). In this situation, only part of the boiler was used while the other portion remained empty. Moisture could then enter the boiler through the cocks and valves and cause corrosion (Sennett 1902:131).

Consecutive military operations, lack of a fresh water supply, and lubricating methods of the period all added to the weakening of the boilers, yet the cause of boiler explosions in the 19th century were still not completely understood.

In 1858, the causes of boiler explosions remained a mystery. According to the *Rudimentary Treatise on Marine Engines and Steam Vessels: Together with Practical Remarks on the Screw and Propelling Power as Used in the Royal and Merchant Navy*, the most common reason for boiler explosions resulted from a faulty safety valve causing the boiler to burst from excess pressure (Murray 1858:74). The other explanation for boiler explosions was allowing the water levels to get too low. This permitted the hot fire to increase the temperature of the iron plates (especially at the top of the boiler) causing them to become so hot that when steam was readmitted through the feed, the plates, already weakened by the heat, would rupture. Most of these explosions occurred instantaneously when a safety valve or communication valve was opened. Copper steam pipes ran between the boiler and the engine because wrought-iron pipes produced scales of rust that would be blown into the engine cylinder and cause damage (Murray 1858:20, 74). No copper pipes have been seen on the site to date and likely either were salvaged sometime between the wrecking event and the archaeological investigation or remain covered with sediments. However, the use of brackish water in the engine would have reduced the structural integrity of the cast-iron over time, making it more susceptible to an explosion. In addition, *Narcissus*' boiler suffered damage when she sank in Mobile

Bay, adding to the weakness of the iron boiler. Finally, many of the men that operated the tug during her final voyage were not experienced seaman and may have panicked when they became lodged on the sandbar (USS *Narcissus* Muster Roll 1865).

*Narcissus'* engine is one of the best preserved examples of a 19<sup>th</sup>-century cast iron inverted, single-cylinder, direct-acting engine. Just like the ship's hull, steam engine machinery varied in size and form based on the service of individual vessels. As Murray wrote in his 1858 treatise on shipbuilding, the machinery must "suit the proposed mode of propulsion, the required form and displacement of the hull, the minimum draught of water, the comparative value of stowage ... the necessity of protection from shot, [and] the efficiency of the armament..." (Murray 1858:2). The principal parts of a low-pressure marine steam engine like the one on *Narcissus* gained power "from the pressure of the steam acting against a partial pressure" (Murray 1858:2):

Thus we have in each case a boiler to generate the steam; a *cylinder, piston*, and *valves* to use it; a *condenser* in which to condense it, and thereby gain the pressure of the atmosphere by causing the steam to work against a vacuum; and lastly, an *air pump* to withdraw the condensing water, the condensed steam, and the uncondensed vapour, and gaseous matter (emphasis in original).

*Narcissus'* engine measurements list the diameter of the cylinder as 20 inches and the stroke as 22 inches (USNRO 1921 II[I]:155). The Navy's purchasing agent clearly measured the outside dimensions of the cylinder for both the diameter of the cylinder and the stroke. The displaced cylinder cap on the engine allowed the precise measurement of the bore, which is 16 inches. The length of the piston rod was measured in order to get the stroke, which is 18 inches. The difference in measurements is accounted for by



adding 4 inches to account for the top and bottom of the cylinder. The remains of the engine are comprised of a cast iron frame that supported the moving parts, valve chest, and cylinder. The cylinder contains the piston used to power the piston rod (Figure 9). The cast iron frame exhibits sophisticated technology for the 19th-century because I-beams were used for the outer frames. This type of construction method added to the overall rigidity of the engine while reducing the weight. The frames are 11 inches in width. If the frames had been solid cast iron the engine would have been extremely heavy, which would have increased the draft of the vessel.

The condenser, the air pump, and bilge pump are not present on the site, making the exact architecture of the ancillary parts of the engine difficult to understand. Portions of two of the valve chest connecting rods extend from the bottom of the valve chest, but were broken at some time and no longer attach to the eccentrics on the shaft. The piston rod still connects to the crosshead, which, while in operation, would have moved up and down on the crosshead guides. The crosshead is attached to the connecting rod, which would have attached to the crank rod and bell crank via a wrist pin assembly. Yet, at some point, possibly during the wrecking event, the connecting rod and wrist pin assembly were broken. The engine provided the rotational motion to the horizontal shaft through the linkage of the connecting rod to the wrist pin and bell crank assembly. During this rotation, the flywheel and counterweight served as a "reservoir of momentum" to keep the "rotatory motion past the top and bottom of the stroke" and maintain a uniform revolution per minute (Murray 1858:3). The flywheel and eccentrics can be seen on the shaft forward of the engine (Figure 9). A portion of the connecting rod and top of the wrist pin assembly are absent. Whether the connecting rod and wrist pin

assembly were damaged during the wrecking event is unclear. If the engine was still moving when the propeller hit the seafloor, the force caused by the abrupt halt of the shaft's revolutions could have stressed the wrist pin assembly, the weakest point of the connecting linkage, to the point of fracture. Alternatively the USN may have returned to the site after the wreck and purposely damaged the engine to remove the incentive of salvage, but no historical documentation has been found that supports this theory.

The four-bladed cast-iron propeller suffered tremendous damage during the wrecking event. One of the blades broke off and the bottom blade on the port side bent forward. The force of the boiler explosion would have blown up through the weakest section of the ship, the portion that was above the waterline. As the force of the explosion blew up and out, enough momentum likely was produced to drive the ship down toward the seafloor. Since the draft of the vessel was 6 feet and the stern drew the most water, *Narcissus* would not have had to travel far to hit bottom, which ranges between 12 and 14 feet deep. Hitting the bottom with her propeller likely broke one blade off and bent the other forward as the ship began to fill with water and sink stern first. The ship then listed to port, enabling the engine to fall to port, which put tension on the shaft breaking it just forward of the shaft log and aft of the engine.

William F. Kilgore's letter of 13 February 1889 stated he and his crew found *Narcissus* with "one third of the hull bottom up and held there by her anchors" (Kilgore 1889). The portion of the hull that Kilgore saw was likely the bow of the vessel because the ship would have been anchored with her bow into the wind and waves, although no historical or archaeological data proves this. One of the anchors was discovered during a remote sensing survey in 2010 (Figure 8). The anchor is still lodged in the seabed on the

northwest side of the site. This clearly corresponds with the deduction that *Narcissus* had her bow to the wind and waves when her boiler exploded.

USS *Narcissus* suffered a catastrophic demise, which means theoretically the site should exhibit "contemporaneity and the absence of purposeful selection" (Gibbins 1990:377; Adams 2001:296). Unfortunately, the fact that the site was salvaged means the archaeological context has been disturbed. Accessible items deemed valuable, and movable, by the salvage divers were allegedly taken from the site, which detracts from the information archaeologists and researchers are able to gain. Therefore, the author used the hull, machinery, fixtures, and fittings combined with the history of the site and vessel as an onboard stratigraphy to understand the biography of the boat (Adams 2001:297). The artifacts allegedly recovered during salvage operations have not been seen by the author, but seem to correspond with artifacts that could have come from a 19th century blockader. These artifacts include many ship fixtures and fittings along with a number of diagnostic pieces (Appendix C).

### *Conclusion*

Obviously, one tugboat or tugboats in general cannot receive sole credit for the success of the blockade, but this study highlighted how tugboats aided the success of the blockade, which affected international politics and the global market. Tugboat design emerged out of functional necessity as maritime commerce became more reliant on steam technology to aid ships in and out of harbors. The general-purpose hull design and steam machinery of early steamers evolved into a specific tugboat design based on economic functionality and task-specific design features. At the onset of the ACW, the USN purchased merchant vessels to enforce the blockade of southern coasts. The utilitarian

nature of the screw-tug was quickly realized once the steamers reached the blockade. This is demonstrated in letters written by USN commanders and the demonstrated increase in screw-propelled tugboats purchased between 1861 and 1865. Tugboats serving with blockading squadrons performed a variety of mission-specific tasks. They were used as traditional towing vessels, yet their shallow draft and powerful steam engines enabled them to be effective coastal patrol craft, service vessels, and armed combatants as well.

The specific history of USS *Narcissus* provides a case study that demonstrated how the functional design of the tugboat added to the success of the Union blockade. The success of the blockade enabled the USN to essentially strangle the Confederacy both economically and militarily, effectively leading to a northern victory. After the War, the USN no longer needed the many vessels purchased to line the coasts of the Confederacy and began to sell them off. USS *Narcissus*, a vessel purchased out of functional necessity, had been on continuous operations for two years. The utilitarian nature of her design enabled her to become an integral component for USN inshore operations. However, the constant use and abuse of this ship, including the dramatic explosion and sinking of the vessel in Mobile in 1865, made her structurally incompetent. When the USN sent *Narcissus* and *Althea* on one last voyage, the vessels were told to stay close to shore because of their fragile nature (Thatcher 1866).

The historical and archaeological investigation of USS *Narcissus* demonstrated that the USN, driven by economic and political pressures, utilized light-draft steam-tugs in a way that facilitated the evolution of close blockading tactics. The archaeological investigation confirmed both the identity of USS *Narcissus* and that she had indeed

suffered a catastrophic boiler explosion. This explosion was likely due to the utilization of a ship designed for a limited, specific function used outside of her operational environment, which put stress on her hull and machinery and led to her ultimate demise.

## REFERENCES

Adams, Jonathan

2001 Ships and boats as archaeological source material. *World Archaeology* 32(3):292-310.

Albion, Robert Greenhalgh

1939 *The Rise of New York Port, 1815-1860*. Northeastern University Press, Boston, MA, reprinted. South Street Museum, New York, NY.

Baird, Donal M.

2003 *Under Tow: A History of Tugs and Towing*. Vanwell Publishing Limited, St. Catharines, Ontario.

Bennett, Michael J.

2004 *Union Jacks: Yankee Sailors in the Civil War*. University of North Carolina Press, Chapel Hill.

*Boston Daily Advertiser*

1863 By Telegraph for the **Boston Daily Advertiser** Latest Despatches Thirty-Eighth Congress First Session. *Boston Daily Advertiser* 9 December:1. Boston, MA.

1864a Shipping News. *Boston Daily Advertiser* 3 February:4. Boston, MA.

1864b Shipping News. *Boston Daily Advertiser* 17 February:4. Boston, MA.

Canfield, Richard

1864 Abstract log of the USS Cowslip, Acting Ensign R. Canfield, U.S. Navy, commanding. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 791-794. Washington, DC.

*Canton Repository*

1864 No title. *Canton Repository* 28 December:3. Canton, OH.

Coombe, Jack D.

1999 *Gunfire Around the Gulf: The Last Major Naval Campaigns of the Civil War*. Benton Books, New York, NY.

*Daily National Intelligencer*

1864 Steamer Blown up in Mobile Bay. *Daily National Intelligencer* 26 December:3. Washington, DC.

de Krafft, James C.P.

1864a Abstract log of the USS Conemaugh, Lieutenant-Commander J.C.P. de Krafft, U.S. Navy, commanding. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 788-790. Washington, DC.

1864b Report of Lieutenant-Commander de Krafft, U.S. Navy, commanding USS Conemaugh, forwarding prize list. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 503. Washington, DC.

Drayton, Percival

1864a Letter from Captain Drayton, U.S. Navy, to Captain Jenkins, U.S. Navy, regarding general matters, New Orleans, 12 April 1864. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 188. Washington, DC.

1864b Letter from Captain Drayton, U.S. Navy, to Captain Jenkins, U.S. Navy, regarding general matters, Off Pensacola, 20 May 1864. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 288-289. Washington, DC.

DuPont, Samuel Francis

1862 Letter to Gustavus Vasa Fox, USS Wabash, Off Port Royal, South Carolina, 21 August. Naval History Society Collection, Gustavus Vasa Fox Papers, New York Historical Society, New York, NY.

Edwards, Thomas

1864 Abstract log of the USS Stockdale, Acting Volunteer Lieutenant Thomas Edwards, U.S. Navy, commanding. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 853-857. Washington, DC.

Farragut, David Glasgow

1862a Letter to Gustavus Vasa Fox, USS *Hartford*, Fortress Monroe, 30 January. In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 299-300. De Vinne Press, New York, NY.

1862b Letter to Gustavus Vasa Fox, USS *Hartford*, Key West, 12 February. In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 300-302. De Vinne Press, New York, NY.

1862c Letter to Gustavus Vasa Fox, U.S. Ship *Colorado*, 21 March. In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 307-308. De Vinne Press, New York, NY.

1862d Letter to Gustavus Vasa Fox, U.S. Flag Ship *Hartford*, Pensacola Bay, 11 October. In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 318-320. De Vinne Press, New York, NY.

1862e Letter to Gustavus Vasa Fox, U.S. Ship *Colorado*, 21 March. In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 307-308. De Vinne Press, New York, NY.

1863 Letter to Gustavus Vasa Fox, Astor House, 30 November. In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 338-339. De Vinne Press, New York, NY.

1864a Letter to Gustavus Vasa Fox, Flag Ship *Hartford*, Off Mobile, 8 February. In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 342-344. De Vinne Press, New York, NY.

1864b Letter to Gustavus Vasa Fox, Flag Ship *Hartford*, Ship Island, 28 February 1864 (sic). In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 345-346. De Vinne Press, New York, NY.

1864c Stations of vessels composing the Western Gulf Blockading Squadron, March 1, 1864 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 120. Washington, DC.

1864d Instructions from Rear-Admiral Farragut, U.S. Navy, to Commodore Palmer, U.S. Navy, regarding general matters. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 123. Washington, DC.

1864e Stations of vessels composing the West Gulf Blockading Squadron, July 15, 1864 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 376. Washington, DC.

1864f Order of Rear-Admiral Farragut, U.S. Navy, to the commandant navy yard, Pensacola, urging forward the repairs to vessels. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 380. Washington, DC.

1864g Stations of the vessels composing the West Gulf Squadron, November 30, 1864 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 744. Washington, DC.



1864h Order of Rear-Admiral Farragut, U.S. Navy, to Commodore Palmer, U.S. Navy, regarding the purchase of a tug. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 377. Washington, DC.

1864i Letter from Rear-Admiral Farragut, U.S. Navy, to the judge of prize court, Boston, regarding the capture of the C.S. ram Tennessee, Flagship *Hartford*, Mobile Bay, 1 October 1864. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 669-670. Washington, DC.

1864j Order of Rear-Admiral Farragut, U.S. Navy, to the commanding officers of the U.S. steamers Cowslip and Narcissus, regarding the abuse of the flag of truce. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 238. Washington, DC.

1864k Order of Rear-Admiral Farragut, U.S. Navy, to Lieutenant-Commander Fitzhugh, U.S. Navy, regarding proposed expedition. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 312. Washington, DC.

1864l Order of Rear-Admiral Farragut, U.S. Navy, to Commodore Palmer, U.S. Navy, to refuse passes to vessels wishing to trade with the Mobile fleet. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 289. Washington, DC.

1864m Order of Rear-Admiral Farragut, U.S. Navy to Acting Ensign Jones, U.S. Navy, regarding the restriction of privileges to trading boats. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 289-290. Washington, DC.

1864n Order of Rear-Admiral Farragut, U.S. Navy, to Lieutenant-Commander Fitzhugh, U.S. Navy, commanding USS *Sebago*, in view of reported plan for capture of small Federal vessel near Pascagoula, Miss. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 330-331. Washington, DC.

1864o Stations of vessels composing the West Gulf Blockading Squadron. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 624. Washington, DC.

1864p Order of Rear-Admiral Farragut, U.S. Navy, to Lieutenant-Commander Greene, U.S. Navy, regarding the captured sloop *Oregon*. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 643. Washington, DC.

1864q Report of Rear-Admiral Farragut, U.S. Navy, regarding the capture by the USS *Narcissus* of the schooner *Oregon*. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 662. Washington, DC.

1864r Report of Rear-Admiral Farragut, U.S. Navy, regarding the operations of the Confederates in the vicinity of Mobile in preparation for defense. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, 717. Washington, DC.

Florida Division of Historical Resources

1987 Application for Historic Shipwreck Exploration or Salvage in Florida Waters. Bureau of Archaeological Research, Florida Master Site File HI5369. Tallahassee, FL.

Fox, Gustavus Vasa

1862 Letter to David Glasgow Farragut, Navy Department, 9 September. In *Confidential Correspondence of Gustavus Vasa Fox Assistant Secretary of the Navy 1861-1865, Vol. I*, Robert Means Thompson and Richard Wainwright, editors, pp. 317-318. De Vinne Press, New York, NY.

1864 Letter from the Assistant Secretary of the Navy to Rear-Admiral Farragut, U.S. Navy, transmitting information regarding Confederate torpedo boat built at Selma, Ala., Navy Department, 5 December 1864. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 748. Washington, DC.

Gibbins, David

1990 Analytical approaches in maritime archaeology: a Mediterranean perspective. *Antiquity* 64:376-389.

Goldsborough, Louis M.

1862 Letter to Gustavus Vasa Fox, Off Hatteras Inlet, 23 February 1862. Naval History Society Collection, Gustavus Vasa Fox Papers, New York Historical Society, New York, NY.

Gould, Richard A.

2000 *Archaeology and the social history of ships*. Cambridge University Press, New York, NY.

Graham, Gerald S.

1956 The Ascendency of the Sailing Ship 1850-85. *The Economic History Review* 9(1):74-88.

Granger, Gordon

1864 Letter from Rear-Admiral Farragut, U.S. Navy, to Major-General Granger, U.S. Army, referring to results and offering cooperation, Flagship *Hartford*, Mobile Bay, 5 August 1864. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 519-520. Washington, DC.

Halleck, Henry Wager

1864 Telegram from Major-General and Chief of Staff Henry W. Halleck to Major-General Edward R.S. Canby, Headquarters of the Army, Washington, D.C., 7 November

1864. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 721. Washington, DC.

*Illustrated New Age*

1863 Immense War Fleet In New York. *Illustrated New Age* 26 October:2. Philadelphia, PA.

Jenkins, Thornton Alexander

1864a Instructions for night service, night distinctions for vessels, and special and other night signals for the blockade off Mobile, January 25, 1864 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 55-57. Washington, DC.

1864b Report of Captain Jenkins, U.S. Navy, urging the necessity of an increased force in Mobile Bay. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 750. Washington, DC.

Johnson, Andrew

1865 Executive Order revoking all restrictions on commercial intercourse. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 171. Washington, DC.

Jones, William G.

1864 Report of Acting Ensign Jones, U.S. Navy, late commanding USS *Narcissus*. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 752-753. Washington, DC.

1865 Report of Acting Ensign Jones, U.S. Navy, of the USS *Antona*. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 37. Washington, DC.

Kilgore, William.F.

1866 Letter to Commander US Steamer *Sagamore*, re the loss of USS *Narcissus* near Tampa Bay, January 4, 1866, Tampa Bay, Florida, 8 January 1866. U.S. National Archives and Records Administration, Naval Records Collection of the Office of Naval Records and Library (ONRL), RG45, Microfilm Records: Subject File, U.S. Navy, 1775-1910, Misc. Records, HG-GROUNDINGS, STRANDING, FOUNDERINGS, & SINKINGS, Misc. & A-L. [Box No. 179], HG-Sinkings, groundings, strandings, and foundering. US and CS (Confederate States) Ships, 1860-1870. Folder: US Steamer *Althea*, National Archives and Records Administration, Washington, DC.

1889 Letter to the Secretary of the Navy, Sag Harbor, New York, 13 February. United States Navy Library, Naval History and Heritage Command, ZC (Ship) Files, File: USS *Narcissus*, Washington Navy Yard, Washington, DC.

Knauerhase, Ramon

1967 The Compound Marine Steam Engine: A Study in the Relationship Between Technological Change and Economic Development. *The Journal of Economic History* 27(4):615-617.

Krivor, Michael

2005 Diver Evaluations of 34 Targets in the Egmont Shoals Borrow Area Pinellas County, Florida. Report to U.S. Army Corps of Engineers, Jacksonville District, from Panamerican Consultants, Inc., Memphis, TN.

*L'Union*

1864 Correspondent; Mississippi; Narcissus; Nouvelle-Orleans. *L'Union* 28 April:3. New Orleans, LA.

Landon, Charles E.

1960 Technological Progress in Transportation on the Mississippi River System. *The Journal of Business* 33(1):43-62.

Leer, Carl

1987 Letter to Jim Miller, Tallahassee, 19 August. Florida Division of Historical Resources, Bureau of Archaeological Research, Florida Master Site File HI5369, Tallahassee, FL.

Mahan, Alfred T.

1970 *The Gulf and Inland Waters: The Navy in the Civil War*. Books for Libraries Press, RPT, New York, NY.

Matteson, George

2005 *Tugboats of New York: An Illustrated History*. New York University Press, New York, NY.

McPherson, James M.

1988 *Battle Cry of Freedom: The Civil War Era*. Oxford University Press, New York.

Morris III, John W., Gordon P. Watts, Jr., Casey Coy, and Michael Terrell

2007 Tampa Bay Historical Shipwreck Survey Final Report. Report to Bureau of Historic Preservation, Florida Division of Historical Resources, Florida Department of State, Tallahassee, FL, from The Florida Aquarium, Tampa, FL.

2008 Tampa Bay Historical Shipwreck Survey Final Report. Report to Bureau of Historic Preservation, Florida Division of Historical Resources, Florida Department of State, Tallahassee, FL, from The Florida Aquarium, Tampa, FL.

Morris III, John W., Gordon P. Watts, Jr., Casey Coy, Michael Terrell, and Nicole Tumbleson

2010 Tampa Bay Historical Shipwreck Survey Final Report. Report to Bureau of Historic Preservation, Florida Division of Historical Resources, Florida Department of State, Tallahassee, FL, from The Florida Aquarium, Tampa, FL.

Morrison, John H.

1958 *History of American Steam Navigation*. Stephen Daye Press, New York, NY.

Muckelroy, Keith

1978 The Archaeology of Shipwrecks. In *Maritime Archaeology: A Reader of Substantive and Theoretical Contributions*, Lawrence E. Babits and Hans Van Tilburg, editors, pp. 267-290. Plenum Press, New York, NY.

Murray, Robert

1858 *Rudimentary treatise on marine engines and steam vessels: together with practical remarks on the screw and propelling power as used in the royal and merchant navy*. John Weale, London, UK.

National Oceanic and Atmospheric Administration

2006 Tampa Bay Entrance, NOAA, United States-Gulf Coast Florida, Chart 11415, Edition 8, August.

<<http://xpda.com/nauticalcharts/11415%20TAMPA%20BAY%20ENTRANCE.png>>. Accessed 10 October 2011.

*New Orleans Era*

1864 From Mobile. Destruction of the Gunboat Narcissus. *New Orleans Era* 8 December:3. New Orleans, LA.

*New Orleans Tribune*

1864 News From Mobile Bay. The U. S. Steamer Narcissus Blown Up. *New Orleans Tribune* 16 December:1. New Orleans, LA.

*New Orleans Weekly Times*

1864 No title. *New Orleans Weekly Times* 18 June:3. New Orleans, LA.

*New York Herald*

1864 The Gulf Destruction of the Narcissus by the Explosion of a Torpedo in Mobile Bay. *New York Herald* 15 December:8. New York, NY.

*New York Herald-Tribune*

1866 Wreck of the Narcissus-List of Officers Lost Navy Department, Washington, Feb. 3, 1866. *New York Herald-Tribune* 7 February:5. New York, NY.

*New York Times*

1864 Naval Intelligence. *New York Times* 28 December:3. New York, NY.

1866 The United States Steamer *Narcissus*: Further Details from Ensign Lannan. *New York Times* 4 February:8. New York, NY.

Palmer, James S.

1864 Report of Commodore Palmer, U.S. Navy, regarding the successful raising of the USS *Narcissus*. *Official Records of the Union and Confederate Navies in the War of the Rebellion* Series I, Vol. 21, p. 753. Washington, DC.

*Philadelphia Inquirer*

1864 From New Orleans and Cairo. *Philadelphia Inquirer* 26 December:1. Philadelphia, PA.

Porter, David Dixon

1886 *The Naval History of the Civil War*. The Sherman Publishing Company, New York.

*Portland Daily Advertiser*

1863 By Telegraph. *Portland Daily Advertiser* 9 December:4. Portland, MA.

Ridgely-Nevitt, Cedric

1981 *American Steamships of the Atlantic*. University of Delaware Press, Newark.

Rowland, Keith Thomas

1970 *Steam at Sea: A History of Steam Navigation*. David & Charles, Newton Abbot, Great Britain.

*Saturday Evening Gazette*

1864 From New Orleans. Capture of a Blockade Runner-Gunboat *Narcissus* Destroyed by a Torpedo-The Cotton Market. *Saturday Evening Gazette* 23 December:3. Boston, MA.

Sennett, Richard

1902 *The Marine Steam Engine: A Treatise for Engineering Students, Young Engineers, and Officers of the Royal Navy and Mercantile Marine*. Longmans, Green, and Co., New York, NY.

Silverstone, Paul H.

1989 *Warships of the Civil War Navies*. Naval Institute Press, Annapolis, MD.

Simson, Jay W.

2001 *Naval Strategies of the Civil War: Confederate Innovations and Federal Opportunism*. Cumberland House Publishing, Inc., Nashville, TN.

Soley, James Russell

1883 *The Blockade and the Cruisers*. Charles Scribner's Sons, New York, NY.

Surdam, David G.

2001 *Northern Naval Superiority and the Economics of the American Civil War*.  
University of South Carolina Press, Columbia.

Thatcher, Henry K.

1865a Order of Acting Rear-Admiral Thatcher, U.S. Navy, to Commander Crosby, U.S. Navy, for repairs to the USS Cowslip. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 209.. Washington, DC.

1865b Vessels attached to West Gulf Squadron, June 1, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 213. Washington, DC.

1865c Stations of vessels composing the West Gulf Blockading Squadron. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 4. Washington, DC.

1865d List of vessels within the limits of the West Gulf Squadron, January 15, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 12. Washington, DC.

1865e List of vessels belonging to the West Gulf Squadron, February 1, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 25. Washington, DC.

1865f List of vessels belonging to the West Gulf Squadron, February 15, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 39. Washington, DC.

1865g Vessels of the Western Gulf Squadron, March 1, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 56. Washington, DC.

1865h List of vessels belonging to the West Gulf Squadron, March 15, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 106. Washington, DC.

1865i List of vessels belonging to the West Gulf Squadron, April 1, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 121. Washington, DC.

1865j Vessels of the West Gulf Squadron, April 15, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 129. Washington, DC.

1865k List of vessels of the West Gulf Squadron, May 1, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 172. Washington, DC.

1865l Vessels attached to West Gulf Squadron May 15, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 189. Washington, DC.

1865m Vessels attached to West Gulf Squadron, June 1, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, pp. 209-213. Washington, DC.

1865n Vessels of West Gulf Squadron July 1, 1865 (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 231. Washington, DC.

1865o Report of Rear-Admiral Thatcher, U.S. Navy, giving list of vessels comprising the Gulf Squadron under his command. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 253. Washington, DC.

1865p Report of Acting Rear-Admiral Thatcher, U.S. Navy, forwarding a return of vessels employed in the Gulf Squadron. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 22, p. 262. Washington, DC.

1866 Letter to Gideon Welles, Gulf Squadron Flagship *Estrella*, Pensacola Bay, 22 January 1866. Microfilm reproduction from the U.S. National Archives and Records Administration, Naval Records Collection of the Office of Naval Records and Library (ONRL) RG45, Microfilm M625, Area file of Naval Records Collection, Roll 212, National Archives and Records Administration, Washington, DC.

Thiesen, William H.

2006 *Industrializing American Shipbuilding: The Transformation of Ship Design and Construction, 1820-1920*. University Press of Florida, Gainesville.

Tower Jr., Howard B.

1988a Letter to Jim Miller and Roger Smith, Jacksonville, 29 July. Florida Division of Historical Resources, Bureau of Archaeological Research, Florida Master Site File HI5369, Tallahassee, FL.

1988b Archaeological Survey (sic) Egmont Key Steamer Wreck. Division of Historical Resources, Bureau of Archaeological Research, Florida Master Site File HI5369. Tallahassee, FL.

1992 *Treasure Quest Magazine*. Summer:58-62.



*Treasure Magazine*

1988 Mystery Ship. *Treasure Magazine* 19(10):3.

1988a Staffer Called in to I.D. Mystery Ship. *Treasure Magazine* 19(10):6-10.

United States Naval Records Office (USNRO)

[1903] Distribution of Vessels Lost to Navy, 1865-1903. U.S. National Archives and Records Administration, Naval Records Collection of the Office of Naval Records and Library (ONRL), RG45, Box No. 188: U.S. Navy, 1775-1910, Folder: HV Missing Ships; U.S. Ships Lost 1777-1910, National Archives and Records Administration, Washington, DC.

1921 *Official Records of the Union and Confederate Navies in the War of the Rebellion*. Series II, Vol. I. Washington: Government Printing Office.

<<http://cdl.library.cornell.edu/moa/browse.monographs/ofre.html>>. Accessed 18 June 2007.

USS *Althea* Deck Log

1866 USS *Althea* Deck Log Jan. 1 through 7 January 1866. Microfilm reproduction from U.S. National Archives and Records Administration, Textual Archives Services Division (NWCTB). RG41, Stack 18W4 (Copies at KM Desk), National Archives and Records Administration, College Park, MD.

USS *Narcissus* Muster Roll

1865 USS *Narcissus* 31 December 1865. Microfilm reproduction from U.S. National Archives and Records Administration. RG 24 Muster Rolls of Ships, Stack 18W4, National Archives and Records Administration, College Park, MD.

USS *Narcissus* Service Record

1864-1866 Service log, data sheet, and correspondence for USS *Narcissus*. United States Navy Library, Naval History and Heritage Command, ZC (Ship) Files, File: USS *Narcissus*, Washington Navy Yard, Washington, DC.

Watts, Jr., Gordon P.

1996 The Civil War at Sea: Dawn of an Age of Iron and Engineering. In *Ships and Shipwrecks of the Americas: A History Based on Underwater Archaeology*, George F. Bass, editor, pp. 207-230. Thames and Hudson Ltd, London.

2001 A Remote Sensing Survey of the Proposed Egmont Channel Borrow Area, Pinellas County, Florida. Report to U.S. Army Corps of Engineers, Jacksonville District, Jacksonville, FL, from Tidewater Atlantic Research, Inc., Washington, NC.

Watts, Jr., Gordon P. and Richard W. Lawrence

2001 An Investigation and Assessment of Civil War Shipwrecks off Fort Fisher, North Carolina. Report to the National Park Service, Washington, DC, from Program in Maritime History and Underwater Archaeology at East Carolina University, Greenville, NC.

Weddle, Kevin J.

2002 The Blockade Board of 1861 and Union Naval Strategy. *Civil War History* 48(2):123-142.

Welles, Gideon

1861 Letter to Samuel Francis Du Pont, 25 May, 1, 3, 8, 12 June. U.S. National Archives and Records Administration, Naval Records Collection of the Office of Naval Records and Library (ORNL), RG 45, Correspondence of the Secretary of the Navy, National Archives and Records Administration, Washington, DC.

1863 Order of the Secretary of the Navy to the commandant, navy yard, New York, regarding tugs (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 20, p. 695. Washington, DC.

1864a Order of the Secretary of the Navy to commandant navy yard, New York, regarding the U.S. steamers Cowslip and Narcissus. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 54. Washington, DC.

1864b Report of Commodore Palmer, U.S. Navy, transmitting record of a court enquiry (sic). *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, p. 754. Washington, DC.

West, Jr., Richard Sedgewick

1943 *Gideon Welles, Lincoln's Navy Department*. Bobbs-Merrill Company, New York, NY.

Williams, James M.

1864 Report of Lieutenant-Colonel Williams, C.S. Army, late commanding Fort Powell. *Official Records of the Union and Confederate Navies in the War of the Rebellion*, Series I, Vol. 21, pp. 560-561. Washington, DC.

Wolf, Eric

1982 *Europe and the People Without History: With a New Preface*. University of California Press, Los Angeles.

## APPENDIXES

## Appendix A

Table of tugboats purchased by the Union Navy between 1861 and 1865

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Leslie</i>	War Department	1861	100 tons	U	1 screw	Transferred from War Department. Service Record: Washington Navy Yard 1861. Potomac Flotilla, tender. Returned to War Department, 2 Jun 1865.
<i>Tigress</i>	U	1861	U	U	1 screw, 1 HP engine, 1 boiler	Potomac Flotilla. Sunk in collision with merchant vessel State of Maine off Indian Head, MD, 10 Sep 1861. Wreck raised and sold.
<i>Cohasset</i>	Philadelphia, PA	1861	100 tons	82 ft. x 18 ft. 10 in. x 9 ft.	1 screw, 1 inverted vertical HP engine (16 in. x 6 ft.); 8 knots	SABS 1861. Operations in Nansemond River, Va., 11 April-4 May 1863. Expediton up James River, 4-7 Aug 1863. Beaufort, NC, 1864. Yard tug Boston Nyd, 1865-82 and Newport 1882-92. Sold May 1892.
<i>Zouave</i>	Albany, NY	1861	127 tons	95 ft. x 20 ft. 10 in. x 9 ft.	1 screw, 2 HP direct-acting engine; 10 knots	NABS 1862. Battle of Hampton Roads, 8 Mar 1862. Operations in Nansemond River, VA, 11 Apr-4 May 1863. Decomm 14 Jun 1865. Sold 12 Jul 1865. Prize: 18 Jan 1863: <i>J.C. McCabe</i>
<i>Reliance</i>	Keyport, NJ	1861	90 tons	93 ft. x 17 ft. x 8 ft., d 7 ft. 5 in.	1 screw, 2 vertical direct-acting engines (17 in. x 1 ft. 5 in.), 1 boiler	Potomac Flotilla 1861. Engaged batteries at Aquia Creek, VA, 29 May-1 Jun 1861. Expediton up Rappahannock River to Tappahannock, VA, 13-15 Apr 1862. Captured with Satellite by Confederate boarders in Rappahannock River, 23 Aug 1863. Sunk at Port Royal 28 Aug 1863. Prizes: 12 Aug 1862: Blossom; 31 Oct 1862: Pointer. 20 Mar 1863: E. Waterman.
<i>Rescue</i>	Wilmington, DE	1861	111 tons	80 ft. x 18 ft. x 8 ft.	1 screw, inverted vertical engine (26 in. x 2 ft.); 6 knots	Iron hull. Purchased prior to completion. Potomac Flotilla 1861. NABS Nov 1861. Blockade of Charleston Nov 1862-Jun1864. Potomac Flotilla Sep 1861-1865. Washington Navy Yard 1865-1889. Sold 24 Mar 1891. Prizes: 18 Sep 1861: <i>Harford</i> ; 11 Oct 1861: <i>Martha Washington</i> ; 6 Nov 1861: <i>Ada</i> ; 8 Nov 1861: <i>Urbana</i> .
<i>A.C. Powell</i>	Syracuse, NY	1861	90 tons	62 ft. x 17 ft. x 6 ft. 5 in.	1 screw, single engine (15 in. x 1 ft. 3 in.), 1 boiler; 4.5 knots	Potomac Flotilla 1861. James River Flotilla July 1862. Remamed Alert, Aug 1862. Operations in Nansemond River, Va., 11 Apr-4 May 1863. Burned/sank at Norfolk Nyd, 31 May 1863; salvaged. NABS Oct 1863. James River Flotilla, May 1864. Renamed Watch, 2 Feb 1865. Potomac Flotilla, Apr 1865. Decomm 25 May 1865. Sold 5 July 1865.
<i>Island Belle</i>	Keyport, NJ	1861	123 tons	100 ft. x 20 ft. 4 in. x d 6 ft. 7 in.	Sidewheels	Tug and despatch boat. Potomac Flotilla 1861-1862. Tug and dispatch boat. Bombardment at Mathias Point, VA, 12 Oct 1861. Expediton in Rappahannock River, Tappahannock, VA, 13-15 Apr 1862. NABS 1862. Burned to prevent capture after running aground in Appomattox River, 27 Jun 1862.
<i>Jacob Bell</i>	NY	1861	229 tons	141 ft. 3 in. x 21 ft. x d 8 ft. 1 in.	Sidewheels	13 May 1865, went out of commission. Lost, 6 Nov 1865, while being towed to NY by USS <i>Banshee</i> .
<i>Satellite</i>	New York, NY	1861	217 tons	120 ft. 7 in. x 22 ft. 9 in. x d 8 ft. 6 in.	Sidewheels	Potomac Flotilla. Captured, 23 Aug 1863, by Confederate boat Expediton, Rappahannock River.

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Shawsheen</i>	New York, NY	1861	180 tons	118 ft. x 22 ft. 6 in. x d 7 ft. 3 in.	Sidewheels	Purchased under the name <i>Young America</i> . Destroyed, 7 May 1864, by Confederate batteries at Turkey Bend, James River.
<i>Yankee</i>	NY	1861	329 tons	146 ft. x 25 ft. 7 in. x d 9 ft. 7 in.	Sidewheels	Tug chartered Apr 1861 and acquired. Relief of Fort Sumter, April 1861. Potomac Flotilla 1861-1865. Engaged batteries at Cockpit Point, VA, 1 Jan 1862. NABS 1862. Operations in Nansmond River, VA, 11 Apr-4 May 1863. Decomm 16 May 1865. Sold 15 Sep 1865. Prizes: 18 Jul 1861: <i>Favorite</i> ; 16 Aug 1861: <i>T.W. Riley</i> and <i>Jane Wright</i> ; 28 Aug 1861: <i>Remittance</i> . 27 Jul 1862: <i>J.W. Sturges</i> . 11 Jul 1863: <i>Cassandra</i> ; 15 Jul 1863: <i>Nanjemoy</i> ; 1 Aug 1863: <i>Clara Ann</i> .
<i>Mercury</i>	New York, NY	1861	187 tons	128 ft. x 22 ft. 10 in. x d 8 ft.	Sidewheels, 1 engine (36 in. x 8 ft.)	U
<i>O.M. Pettit</i>	Williamsburg, NY	1861	165 tons	106 ft. x 24 ft. 4 in. x 6 ft.	Sidewheels; 8 knots	SABS 1862-1865. Sold 2 Sep 1865.
<i>Dandelion</i>	Philadelphia, PA	1862	111 tons	90 ft. x 19 ft. x 7 ft. 6 in.	1 screw, 1 direct-acting LP engine (27 in. x 2 ft.), 1 boiler; 9 knots	SABS 1863-65. Bombardment of ft. McAllister, Ga., 3 Mar 1863. Bombardment of ft. Wagner, Charleston, Jul-Aug 1863. Assault on Jacksonville, Fla., 2-22 Feb 1864. Decomm 12 July 1865. Sold 15 Aug 1865.
<i>Fern</i>	War Department	1862	50 tons	U	1 screw, 1 engine (16 in. x 20 in.); 10 knots	Her original name was <i>Intrepid</i> , and was employed as a tug on Western Rivers; kept in good repair.
<i>Teaser</i>	U	1862	90 tons	80 ft. x 18 ft. x d 7 ft.	1 screw, 1 engine (1 ft. 8 in. x 1 ft. 8 in.)	Captured in James River and purchased by Navy Department. Went out of commission 2 Jun 1865, at Washington Navy Yard.
<i>Dahlia</i>	Cairo, IL/War Department	1862	50 tons	U	1 screw, 1 engine (18 in. x 20 in.)	Transferred from the War Department, 30 Sep 1862. Formerly the <i>Firefly</i> ; changed to <i>Dahlia</i> by department, 24 Oct 1862. Employed as a tug 2 Sep 1863 and carried no armament.
<i>Hyacinth</i>	War Department	1862	50 tons	U	1 screw, 1 engine (18 in. x 20 in.); 10 mph	Name changed from <i>Spitfire</i> . Employed as a tug on Western rivers and carried no battery.
<i>Laurel</i>	War Department	1862	50 tons	U	1 screw, 1 engine (18 in. x 20 in.); 10 mph	Name changed to <i>Laurel</i> from <i>Erebus</i> , her original name. She was employed as a tug on western rivers. She was kept in good repair.
<i>Daisy</i>	War Department	1862	50 tons	73 ft. 4 in. x 13 ft. 10 in. x d 6 ft. 10 in.	1 screw, 1 engine (22 in. x 22 in.); 10 mph	Name changed from <i>Mulford</i> . 2 Sep 1863, the <i>Daisy</i> was employed as a tug and carried no battery.

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Violet</i>	Brooklyn, NY	1862	146 tons	85 ft. x 19 ft. 9 in. x d 11 ft.	1 screw, 1 inverted direct-acting engine (30 in. x 2 ft. 4 in.), 1 boiler	NABS Feb 1863. Helped capture and refloat grounded blockade runner <i>Ceres</i> at mouth of Cape Fear River, 11 Apr 1863. Ran aground off Cape Fear, NC, while attempting to refloat steamer <i>Antonica</i> , 20 Dec 1863; refloated and repaired. Fitted with spar torpedo 1864. Ran aground off Cape Fear River, 7 Aug 1864 and destroyed to prevent capture.
<i>Resolute</i>	Keyport, NJ	1862	90 tons	93 ft. x 17 ft. x 8 ft., d 7 ft. 5 in.	1 screw, 2 vertical direct-acting engines (17 in. x 1 ft. 5 in.), 1 boiler	Potomac Flotilla 1861-1865. Engaged batteries at Aquia Creek, VA, 29 May-1 Jun 1861. Decomm 26 May 1865. Sold 24 Jun 1865. Prizes: 28 May 1861: unknown; 8 Jun 1861: <i>Somerset</i> ; 17 Jul 1861: <i>Buena Vista</i> ; 18 Jul 1861: <i>Ocean Wave</i> ; 21 Aug 1861: <i>Eagle</i> . 10 Aug 1862: <i>S.S. Jones</i> ; 8 Nov 1862: <i>Capitola</i> .
<i>Myrtle</i>	War Department	1862	60 tons	75 ft. 4 in. x 16 ft. 3 in. x 4 ft. 7 in.	2 screws, 2 engines (15 in. x 16 in.); 10 mph	Transferred from War Department. Name changed from <i>Resolute</i> . Employed as a tug on Western rivers 2 Sep 1863.
<i>Columbine</i>	New York, NY	1862	133 tons	117 ft. x 20 ft. 7 in. x d 6 ft. 2 in.	Sidewheels	Former identity of this ship questionable. SABS 1863-1864. Assault on Jacksonville, FL, 2-22 Feb 1864. EGBS 1864-1865. Expedition up St. Johns River, 9-12 Mar 1864. Run aground and captured in St. Johns River, 23 May 1864.
<i>Ellis</i>	U	1862	100 tons	U x U x 6 ft.	Sidewheels	Confederate armed tug, captured by the Army at Elizabeth City, NC, 10 Feb 1862. NABS 1862. Capture of Fort Macon, NC, 25-26 Apr 1862. Expedition to Swansboro, NC, 15-19 Aug 1862. Ran aground in New River Inlet during attack on Jacksonville, NC, and destroyed to prevent capture, 25 Nov 1862. Prize: 22 Oct 1862: <i>Adelaide</i> .
<i>Mignonette</i>	War Department	1862	50 tons	U	Sidewheels	Original name was <i>Dauntless</i> . 2 Sep 1863, used as a tug on western rivers.
<i>Daffodil</i>	Keyport, NJ	1862	173 tons	110 ft. 6 in. x 22 ft. 6 in. x 5 ft. 6 in.	Sidewheels, 1 beam engine (30 in. x 6 ft.), 1 boiler; 8 knots	SABS 1862. Port Royal, SC, 1862-1865. Expedition to Murrells Inlet, SC, 29 Dec 1863-1 Jan 1864, and in Broad River, SC, 27 Nov-30 Dec 1864. Engaged batteries in Togodo Creek, SC, 9 Feb 1865. NABS 1865. Sold 13 Mar 1867. Prizes: 13 May 1863: <i>Wonde r</i> . 12 Mar 1864: steamer <i>General Sumter</i> ; 14 Mar 1864: steamer <i>Hattie Brock</i> .
<i>Lily</i>	Cincinnati, OH	1862	50 tons	U	Steam tug	Name changed to <i>Lily</i> from <i>Jessie</i> , by which she was formerly called. Accidentally sunk, 3 May 1863, by collision with <i>Choctaw</i> , in Yazoo River.
<i>Mistletoe</i>	War Department	1862	50 tons	U	Steam tug	Purchased under the name <i>Restless</i> by War Department. Transferred, 30 Sep 1862, from the War Department to the Mississippi Flotilla, at Cairo, IL. 2 Sep 1863, used on the Western Rivers.

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Nettle</i>	War Department	1862	50 tons	U	Steam tug	Transferred from War Department. Originally named <i>Wonder</i> . 2 Sep 1863, employed as a tug on Western rivers. Run down by an ironclad and lost, 20 Oct 1865.
<i>Pansy</i>	War Department	1862	50 tons	U	Steam tug	Transferred from War Department. Formerly named <i>Samson</i> , from which it was changed to <i>Pansy</i> , 24 Oct 1862. 2 Sep 1863, carrying no battery, she was used as a tug on Western rivers.
<i>Samson</i>	War Department	1862	U	U	Steam tug	Transferred by War Department at St. Louis, MO. Formerly one of the Ellet Ram Fleet. Went out of commission 9 Aug 1865 at Mound City, IL.
<i>Pink</i>	Newburgh, NY	1863	184 tons	110 ft. 4 in. x 24 ft. 6 in. x d 7 ft.	1 screw	NABS 1864. WGBS Aug 1864. Ran aground on Dauphin Island and was lost, 22 Sep 1865.
<i>Tulip</i>	NY	1863	183 tons	97 ft. 3 in. x 21 ft. 9 in. x d 9 ft. 6 in.	1 screw	Formerly called <i>Chih Kiang</i> . Name changed to <i>Tulip</i> , 4 Jun 1864, a cabin was ordered to be put on her.
<i>Althea</i>	New Brunswick, NJ	1863	72 tons	70 ft. x 16 ft. 4 in. x d 7 ft.	1 screw ft. 9 knots	Converted by Secor & Co. Fitted for torpedoes 1864. Service Record: NABS 1864, James River. WGBS 1864, Sunk by torpedo in Blakely River, Ala., 3/12/1865; salvaged and recommissioned 11/7/1865. decommissioned 4/25/1866, sold 12/8/1866.
<i>Monterey</i>	Eden Landing, San Francisco, CA	1863	87 tons	75 ft. x 18 ft. x 7 ft.	1 screw, 1 HP engine	Mare Island Navy Yard 1863-1892. Renamed <i>Ivy</i> , 3 Jan 1891.
<i>Lupin</i>	Philadelphia, PA	1863	68 tons	69 ft. x 16 ft. 2 in. x d 6 ft. 6 in.	1 screw, 1 HP engine (20 in. x 1 ft. 8 in.); 1 boiler	Sold 25 Oct 1865
<i>Honeysuckle</i>	Buffalo, NY	1863	241 tons	123 ft. x 20 ft. 2 in. x 10 ft.	1 screw, 1 HP overhead engine (30 in. x 2 ft. 6 in.), 1 boiler; 12 knots	EGulfBS 1864-1865. Despatch and supply vessel 1864. Blockade off Florida 1865. Decommissioned 30 Jun 1865. Sold 15 Aug 1865. Prizes: 11 Jan 1864: <i>Fly</i> ; 20 Mar 1864: <i>Florida</i> ; 29 Apr 1864: <i>Miriam</i> . 17 Jan 1865: <i>Augusta</i> ; 28 Feb 1865: <i>Sort</i> ; 3 Mar 1865: <i>Phantom</i> .
<i>Jasmine</i>	Brooklyn, NY	1863	122 tons	79 ft. x 18 ft. x 7 ft. 6 in., d 9 ft. 2 in.	1 screw, 1 LP engine (26 in. x 2 ft. 2 in.), 2 boilers	WGBS 1863. Decommissioned 12 May 1865. Prize: 14 Jul 1863: <i>Relampago</i> .
<i>Narcissus</i>	East Albany, NY	1863	101 tons	81 ft. 6 in. x 18 ft. 9 in. x 6 ft.	1 screw, 1 overhead cylinder engine (20 in. x 1 ft. 10 in.), 1 boiler; 14 knots	Purchased under the name <i>Mary Cook</i> before completion. Service Record: WGBS Feb 1864. Struck a torpedo and sank off Mobile, AL 7 Dec 1864; salvaged and repaired. Wrecked at Egmont. Prize: 24 Aug 1864: <i>Oregon</i>



Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Snowdrop</i>	Buffalo, NY	1863	125 tons	91 ft. x 17 ft. 6 in. x 8 ft.	1 screw, 1 overhead cylinder engine (24 in. x 2 ft.), 1 boiler; 12 mph	NABS 1864. Hampton Roads area. Norfolk Navy Yard 1865-1883. Sold and broken up 1884.
<i>Carnation</i>	Philadelphia, PA	1863	82 tons	73 ft. 6 in. x 17 ft. 6 in. x 7 ft. 6 in.	1 screw, 1 overhead engine (20 in. x 1 ft. 8 in.), 1 boiler; 1- knots	SABS 1863-65, South Carolina. Decomm 8 Jul 1865. Sold 10 Aug 1865.
<i>Innes</i>	Philadelphia, PA	1863	112 tons	85 ft. x 19 ft. 6 in. x 8 ft.	1 screw, 1 overhead engine, 1 boiler; 12 knots	NABS 1864. Renamed <i>Kalmia</i> 24 Apr 1864. Sold 25 Oct 1865.
<i>Camelia</i>	Buffalo, NY	1863	195 tons	111 ft. x 19 ft. 10 in. x d 11 in.	1 screw, 1 overhead HP engine (30 in. x 2 ft. 6 in.), 1 boiler; 10 knots	SABS 1864-65 off Charleston. Sold 15 Aug 1865.
<i>Iris</i>	Brooklyn, NY	1863	158 tons	87 ft. x 19 ft. x 9 ft.	1 screw, 1 overhead LP engine (28 in. x 2 ft. 4 in.), 1 boiler; 12 mph	SABS 1863. Blockade of Charleston. Expediton to Bull Bay, SC, Feb 1865. Decomm 15 Jul 1865.
<i>Hydrangea</i>	Buffalo, NY	1863	215 tons	120 ft. x 20 ft. 3 in. x d 7 ft.	1 screw, 1 overhead LP engine (30 in. x 2 ft. 6 in.), 1 boiler; 11 knots	NABS 1864. SABS 1864. Decomm 1 Sep 1865. Sold 25 Oct 1865.
<i>Jonquil</i>	Wilmington, DE	1863	90 tons	69 ft. 4 in. x 17 ft. 6 in. x 7 ft.	1 screw, 1 vertical condensing engine (20 in. x 1 ft. 8 in.); 8 knots	SABS 1863. Blockade of Charleston. Decomm 2 Aug 1865. Sold 21 Oct 1865.
<i>Clover</i>	Philadelphia, PA	1863	129 tons	92 ft. x 19 ft. x 9 ft.	1 screw, 1 vertical condensing engine (26 in. x 2 ft. 2 in.); 7 knots	SABS 1864. Beaufort, NC. Decomm 27 Jul 1865. Sold 21 Sep 1865. Prize: 26 Jan 1865: <i>Coquette</i> .
<i>Marigold</i>	Philadelphia, PA	1863	115 tons B	84 ft. 7 in. x 18 ft. 9 in. x 7 ft.	1 screw, 1 vertical direct-acting condensing engine (26 in. x 2 ft. 2 in.); 1 boiler	EGBS 1863-1865. 13 Aug 1863, Henry Winsor & Co. was paid for an armored pilot house that was added to <i>Marigold</i> . Sold 6 Oct 1866. Prizes: 6 Oct 1863: <i>Last Trial</i> . 25 Feb 1865: <i>Salvadora</i> .
<i>Lilac</i>	Philadelphia, PA	1863	129 tons	92 ft. x 19 ft. 1 in. x 8 ft.	1 screw, 1 vertical direct-acting condensing engine; 9 knots	NABS 1863. James River, Beaufort, NC, 1864. Decomm 16 Jun and sold 12 Jul 1865. Prize: 4 Apr 1865:Confederate War Department tug <i>Seaboard</i> .
<i>Larkspur</i>	Wilmington, DE	1863	125 tons	90 ft. 9 in. x 19 ft. 2 in. x 9 ft.	1 screw, 1 vertical direct-acting engine (26 in. x 2 ft. 4 in.); 9 knots	SABS 1863-1865. Blockade of Charleston. Decomm 8 Jul 1865. Sold 10 Aug 1865.
<i>Sweet Briar</i>	Buffalo, NY	1863	243 tons	120 ft. x 21 ft. 3 in. x 9 ft. 6 in.	1 screw, 1 vertical direct-acting engine (30 in. x 2 ft. 6 in.), 1 boiler; 9 knots	SABS 1864-1865. Blockade of Charleston. Decomm 13 Jul 1865. Sold 25 Oct 1865. Prize: 8 Jul 1864: <i>Pocahontas</i> .

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Sunflower</i>	East Boston, MA	1863	294 tons	104 ft. 5 in. x 20 ft. 9 in. x 12 ft.	1 screw, 1 vertical direct-acting engine (36 in. x 3 ft.); 10.5 knots	EGBS May 1863-1865. Occupation of Tampa, FL, 4-7 May 1864. Decomm 3 Jun 1865. Sold 10 Aug 1865. Prizes: 31 May 1863: <i>Echo</i> ; 12 Jun 1863: <i>Pushmataha</i> ; 27 Aug 1863: <i>General Worth</i> ; 6 Oct 1863: <i>Last Trial</i> ; 24 Dec 1863: <i>Hancock</i> . 24 Mar 1864: <i>Josephine</i> ; 6 May 1864: <i>Neptune</i> ; 6 Dec 1864: <i>Pickwick</i> .
<i>Hoyt</i>	Philadelphia, PA	1863	20 tons	45 ft. x 10 ft. 5 in. x 6 ft.	1 screw, 1 vertical HP engine; 7 knots	Spar torpedo boat; Designed as weapon to oppose Confederate rams in Roanoke River, but was never used in combat. Service Record: New Bern, NC, 1864. Sold 10 Aug 1865.
<i>Primrose</i>	Whitehall, NY	1863	94 tons	83 ft. x 17 ft. 6 in. x 7 ft.	1 screw, 1 vertical inverted HP engine (20 in. x 1 ft. 8 in.)	Potomac Flotilla. Operations in Nansemond River, VA, 11 Apr-4 May 1863. Washington Navy Yard 1865-1871. Sold 17 Mar 1871. Prizes: 8 May 1863: <i>Sarah Lavinia</i> ; 2 Jun 1863: <i>Flying Cloud</i> and Richard <i>Vaux</i> .
<i>Rocket</i>	Mystic, CT	1863	127 tons	98 ft. x 18 ft. 10 in. x 7 ft.	1 screw, 1 vertical inverted HP engine (25 in. x 2 ft.); 8.5 knots	Reboilered 1884. New York Navy Yard, ordnance tug 1863-1884. Boston 1884-1899. Stricken 27 Oct 1899. Sold 28 Dec 1899.
<i>Poppy</i>	Philadelphia, PA	1863	93 tons	88 ft. x 19 ft. x 7 ft. 3 in.	1 screw, 1 vertical LP engine (24 in. x 2 ft.), 1 boiler; 8 knots	NABS 1863-1865. Hampton Roads and James River. Sold 30 Nov 1865.
<i>Fuschia</i>	NY	1863	183 tons	97 ft. 3 in. x 21 ft. 9 in. x d 9 ft. 6 in.	1 screw, 2 horizontal engines (20 in. x 24 in.)	Name changed from <i>Kiang Soo</i> . 5 Aug 1865, went out of commission.
<i>Crocus</i>	Mystic, Connecticut	1863	122 tons	79 ft. x 18 ft. 6 in. x 7 ft. 6 in., d 9 ft. 3 in.	1 screw, LP engine; 7.5 knots	Wrecked on Bodies Island, NC, 17 Aug 1863
<i>Speedwell</i>	Boston, MA	1863	350 tons	137 ft. x 26 ft. x 9 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Built by contract with James Tetlow. 13 Nov 1865, arrived at Portsmouth Navy Yard, for use there. Yard tug Portsmouth 1866-1876, and Washington, then Norfolk. Stricken 19 Dec 1890. Sold 1 Aug 1894.
<i>Rose</i>	New Brunswick, NJ	1863	96 tons	84 ft. x 18 ft. 2 in. x 7 ft. 3 in.	1 screw; 8.5 knots	Fitted for spar torpedo 1864. Potomac Flotilla 1864. WGBS Aug 1864-1865. Pensacola Navy Yard 1865-1883. Stricken 3 Mar 1883. Sold 20 Sep 1883.
<i>Dai Ching</i>	NY	1863	520 tons	170 ft. 6 in. x 29 ft. 4 in. x d 11 ft.	2 screws, 1 direct-acting LP engine (32 in. x 26 in.); 6 knots	Built for naval service in China. Got ashore and abandoned to Confederates in Combahee River, SC, 26 Jan 1865.
<i>Ida</i>	Gretna, LA	1863	104 tons	U	Sidewheels	Mortar Flotilla, Mississippi River, 1863. Supported operations in Mobile Bay 1865. Sunk by torpedo in Blakely River, 13 Apr 1865. Raised and sold, 23 Sep 1865.
<i>Geranium</i>	Newburgh, NY	1863	224 tons	128 ft. 6 in. x 23 ft. 3 in. x 5 ft., d 8 ft.	Sidewheels, 1 beam engine (34 in. x 8 ft.), 1 boiler	SABS 1863. Expediton up Stono and Folly rivers, SC, 9-14 Feb 1865. Operations at Bull Bay, SC, February 1865. Decomm 15 Jul 1865.

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Heliotrope</i>	U	1863	238 tons	134 ft. x 24 ft. 6 in. x 5 ft.	Sidewheels, 1 inclined engine (28 in. x 4 ft.); 6 knots	Wooden hull. NABS 1864, tug and ordnance boat. Expedition up Rappahannock River, 6-8 Mar, and up Mattox Creek, VA, 16-18 Mar 1865.
<i>Oleander</i>	Keyport, NJ	1863	263 tons	144 ft. 10 in. x 22 ft. 6 in. x 6 ft.	Sidewheels, 1 vertical beam engine (36 in. x 7 ft.), 1 boiler; 11 knots	Purchased prior to completion. SABS 1863-1865. Bombardment of New Smyrna, FL, 28 Jul 1863. Assault on Jacksonville, FL, 2-22 Feb 1864. Decomm 18 Aug 1865. Sold 5 Sep 1865.
<i>Hollyhock</i>	U	1863	352 tons	135 ft. x 26 ft. 9 in. x 7 ft., d 11 ft.	Sidewheels, 2 engines; 14 knots	Captured by USS <i>Huntsville</i> in Bahama Channel, 21 Jul 1862. Renamed Jul 1863. Tender and supply ship at New Orleans, 1863-1865. Sold 5 Oct 1865.
<i>Ida</i>	New Orleans, LA	1863	104 tons	U	Steam tug	Purchased by Admiral D.G. Farragut. Blown up by torpedo in main ship channel, near Choctaw Pass, Mobile Bay, 13 Apr 1865. The ordnance and ordnance stores were not sold. Wreck sold, 11 Sep 1865, at Mobile, AL.
<i>Pilgrim</i>	Wilmington, DE	1864	170 tons	U	1 screw	Built by contract with Pusey, Jones & Co. After a satisfactory trial trip, delivered to Government at Philadelphia Navy Yard, 2 Mar 1865. Dropped, 1 Jan 1889, from Navy Register.
<i>Arethusa</i>	Philadelphia, PA	1864	195 tons	110 ft. x 22 ft. x 8 ft. 8 in.	1 screw, 1 direct-acting engine (34 in. x 2 ft. 6 in.)	SABS 1864. Collier, Port Royal, SC. Sold 3 Jan 1866.
<i>Zeta</i>	Philadelphia, PA	1864	34 tons	58 ft. x 13 ft. x 7 ft. 6 in.	1 screw, 1 engine (15 in. x 1 ft. 3 in.), 1 boiler; 8 knots	Also known as <i>Tug No. 6</i> . Renamed Nov 1864. Torpedo tug in James River, 1865. Sold 24 Jun 1865.
<i>Gamma</i>	Philadelphia, PA	1864	36 tons	65 ft. x 14 ft. 3 in. x d 5 ft. 4 in.	1 screw, 1 engine (16 in. x 1 ft. 4 in.), 1 boiler; 12 knots	Also know as <i>Tug No. 3</i> . Service Record: James River, picket boat. New Bern, NC, 1865. Sold 25 Oct 1865.
<i>Delta</i>	Philadelphia, PA	1864	44 tons	66 ft. x 14 ft. x 7 ft. 8 in.	1 screw, 1 engine (16 in. x 1 ft. 4 in.), 1 boiler; 9 knots	Also known as <i>Tug No. 4</i> . Renamed 27 Nov 1864. Converted to torpedo tug. Service Record: James River 1864. North Carolina coast 1865. Sold 5 Sep 1865.
<i>Epsilon</i>	Philadelphia, PA	1864	51 tons	66 ft. x 15 ft. x 7 ft. 6 in.	1 screw, 1 HP direct-acting engine (17 in. x 1 ft. 5 in.), 1 boiler; 9 knots	Also known as <i>Tug No. 5</i> . Renamed Nov 1864. Service Record: James River, 1864-1865. Sold 12 July 1865.
<i>Harcourt</i>	Buffalo, NY	1864	68 tons	66 ft. x 16 ft. 3 in. x 7 ft. 9 in.	1 screw, 1 HP engine, 1 boiler; 13 knots	NABS 1864. James River 1865. Decomm 20 Nov 1865. Sold 16 Apr 1867.
<i>Juniper</i>	Camden, NJ	1864	116 tons	79 ft. 6 in. x 18 ft. 4 in. x 9 ft.	1 screw, 1 overhead condensing engine (24 in. x 1 ft. 8 in.), 1 boiler; 10 knots.	Potomac Flotilla 1864-1865. Decomm 26 May 1865.
<i>Verbena</i>	Brooklyn, NY	1864	104 tons	78 ft. 4 in. x 17 ft. 6 in. x 8 ft.	1 screw, 1 overhead cylinder engine (24 in. x 1 ft. 8 in.), 1 boiler; 12 mph	Potomac Flotilla 1864. Decomm 13 Jun 1865. Sold 20 Jul 1865.

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Clematis</i>	Cleveland, OH	1864	296 tons	127 ft. x 22 ft. x 10 ft.	1 screw, 1 overhead HP engine (32 in. x 2 ft. 6 in.), 1 boiler; 12 knots	James River area 1864-65. WGBS 1865-66. Decomm 6 Jun 1866. Sold 26 Nov 1866.
<i>Bignonia</i>	Cleveland, OH	1864	321 tons	130 ft. 10 in. x 21 ft. 2 in. x 10 ft. 8 in.	1 screw, 1 overhead LP engine (30 in. x 2 ft. 6 in.), 1 boiler; 10 knots	NABS 1864-65. Sold 12 Jul 1865.
<i>Bazely</i>	Philadelphia, PA	1864	50 tons	70 ft. x 16 ft. x 6 ft. 6 in.	1 screw, 1 vertical HP engine (18 in. x 18 in.); 10 knots	Name changed from <i>Beta</i> . Purchased for use as picket boat on James River. Sunk, 10 Dec 1864, by a torpedo in Roanoke River, NC, near Jamesville.
<i>Periwinkle</i>	Philadelphia, PA	1864	387 tons	140 ft. x 28 ft. x 10 ft. 6 in.	1 screw, 1 vertical condensing engine (40 in. x 3 ft.), 1 boiler	Two masted schooner rig. Service Record: Potomac Flotilla Jan-Jun 1865. Decomm 1867.
<i>Berberry</i>	Philadelphia, PA	1864	160 tons	99 ft. 6 in. x 20 ft. 6 in. x 8 ft. 6 in.	1 screw, 1 vertical direct acting condensing engine (30 in. x 2 ft. 2 in.), 1 boiler; 5 knots	NABS 1864-65, off NC. Sold 12 Jul 1865.
<i>Peony</i>	Philadelphia, PA	1864	180 tons	104 ft. 6 in. x 20 ft. 6 in. x 8 ft. 6 in.	1 screw, 1 vertical direct-acting condensing engine (34 in. x 2 ft. 8 in.), 1 boiler; 9 knots	NABS 1865. Second attack on Ft. Fisher, NC, 13-15 Jan 1865. Sold 1 Aug 1865.
<i>Catalpa</i>	Brooklyn, NY	1864	191 tons	105 ft. 3 in. x 22 ft. 2 in. x 9 ft.	1 screw, 1 vertical direct-acting condensing engine, (34 in. x 2 ft. 6 in.), 1 boiler; 10 knots	SABS 1864. Decomm 1 Sep 1865. Yard tug, New York. Sold 23 Jul 1894.
<i>Lavender</i>	Philadelphia, PA	1864	173 tons	112 ft. x 22 ft. x 7 ft. 6 in.	1 screw, 1 vertical direct-acting LP engine (30 in. x 2 ft. 6 in.); 1 boiler	SABS 1864. Wrecked in squall of North Carolina coast, 12 Jun 1864
<i>Amaranthus</i>	Wilmington, DE	1864	182 tons	117 ft. x 21 ft. x 9 ft.	1 screw, 1 vertical engine (30 in. x 2 ft. 6 in.), 1 boiler; 9.5 knots	SABS 1864-1865. Storeship and tug. Decomm 19 Aug 1865. Sold 5 Sept 1865.
<i>Azalea</i>	Boston, MA	1864	176 tons	110 ft. x 21 ft. 6 in. x 10 ft.	1 screw, 1 vertical engine (30 in. x 2 ft. 8 in.); 9 knots	Acquired from builder; SABS 1864-1865. Blockade of Charleston and Savannah. Sold 10 Aug 1865. Prizes: 8 July 1864: <i>Pocahontas</i> ; 23 May 1865: <i>Sarah M. Newhall</i> .
<i>Clinton</i>	Wilmington, DE	1864	50 tons	61 ft. 8 in. x 15 ft. 10 in. x 7 ft.	1 screw, 1 vertical engine, 1 boiler; 11 knots	NABS 1864-65, picket boat in James River and Norfolk Navy Yard. New York Navy Yard 1865-70. Sold 3 Aug 1870.
<i>Martin</i>	Albany, NY	1864	25 tons	45 ft. 3 in. x 11 ft. 3 in. x 5 ft. 9 in.	1 screw, 1 vertical HP engine (13 1/2 in. x 1 ft. 3 in.); 6 knots	NABS 1864. North Carolina waters 1864. Capture of Plymouth, NC, 29-31 Oct 1864. Sold 10 Aug 1865.

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Sorrel</i>	Philadelphia, PA	1864	68 tons	77 ft. x 16 ft. 6 in. x 6 ft. 6 in.	1 screw, 1 vertical HP engine (18 in. x 1 ft. 6 in.), 1 boiler	Philadelphia Navy Yard 1864-1883. Sold 27 Sep 1883.
<i>Beta</i>	Gloucester, NJ	1864	50 tons	70 ft. x 16 ft. x 7 ft.	1 screw, 1 vertical HP engine (18 in. x 1 ft. 6 in.); 10 knots	Also known as <i>Tug No. 2</i> ; James River. New Bern, NC, 1864. Capture of Plymouth, NC, Roanoke River, 29-31 Oct 1864. Sunk by mine in Roanoke River, 10 Dec 1864.
<i>Alpha</i>	Philadelphia, PA	1864	55 tons	72 ft. x 16 ft. 6 in. x 7 in.	1 screw, 1 vertical HP engine (18 in. x 1 ft. 6 in.); 9 knots	Outfitted as spar torpedo boat; designated <i>Tug No. 1</i> renamed <i>Alpha</i> , Dec 1864. James River Flotilla. Sold 9 Sep 1885.
<i>Glance</i>	Chester, PA	1864	80 tons	75 ft. x 17 ft. x 8 ft.	1 screw, 1 vertical HP engine (20 in. x 2 ft.), 1 boiler; 8 knots	Hampton Roads, VA., yard tug 1864-1865, and Philadelphia, PA, PA 1865-1883. Sold 27 Sep 1883.
<i>Saffron</i>	New Brunswick, NJ	1864	73 tons	66 ft. x 17 ft. 1 in. x 8 ft.	1 screw, 1 vertical HP engine, 1 boiler	May also have been known as <i>Theta</i> . NABS 1865. Sold 25 Oct 1865.
<i>Anemone</i>	Philadelphia, PA	1864	156 tons	99 ft. x 20 ft. 5 in. x 11 ft.	1 screw, 1 vertical LP engine (30 in. x 2 ft. 2 in.), 1 boiler; 11 knots	NABS 1864-65. Unsuccessful attack on Ft. Fisher, NC 24-25 Dec 1864. sold 25 Oct 1865.
<i>Gladiolus</i>	Philadelphia, PA	1864	81 tons	88 ft. x 18 ft. 6 in. x 8 ft.	1 screw, 1 vertical LP engine (30 in. x 2 ft. 4 in.), 1 boiler	SABS 1864. Blockade of Charleston. Decomm 30 Aug 1865. Sold 15 Sept 1865. Prize: 18 Feb 1865: steamer <i>Syren</i> .
<i>Aster</i>	Wilmington, DE	1864	285 tons	122 ft. 6 in. x 23 ft. x 10 ft.	1 screw, 1 vertical LP engine (40 in. x 3 ft. 6 in.), 1 boiler	Purchased new. Ran aground at Fort Fisher while chasing blockade runner <i>Annie</i> and destroyed to prevent capture, 8 Oct 1864. Prize: 7 Oct 1864: steamer <i>Annie</i> .
<i>Belle</i>	Philadelphia, PA	1864	56 tons	62 ft. 2 in. x 15 ft. 2 in. x 8 ft.	1 screw, HP engine; 7.5 knots	Spar torpedo boat; NABS. Despatch vessel. Capture of Plymouth, NC, 29-31 Oct 1864. Sold 12 Jul 1865.
<i>Pinta</i>	Chester, PA	1864	350 tons	137 ft. x 26 ft. x 9 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Built by contract with Reaney, Son & Archbold. Yard tug Philadelphia. Alaska patrol 1884-1897. Training ship 1898-1908. Stricken 2 Jan 1908.
<i>Standish</i>	Boston, MA	1864	350 tons	137 ft. x 26 ft. x 9 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Yard tug Norfolk 1871-1879, then Newport. Practice ship and station tug, Annapolis until 1921. Sold 5 Aug 1921.
<i>Moccasin</i>	Philadelphia, PA	1864	192 tons	104 ft. 5 in. x 22 ft. 3 in. x 9 ft.	1 screw, vertical direct-acting engine (32 in. x 2 ft. 10 in.), 1 boiler; 10 knots	Renamed 25 Jul 1864. Service Record: NABS 1864. Search for CSS <i>Tallahassee</i> , Aug 1864. Flotilla Mar 1865. Decomm 12 Aug 1865.
<i>Laburnum</i>	Philadelphia, PA	1864	181 tons	110 ft. x 22 ft. x 9 ft.	1 screw, vertical direct-acting engine; 10 knots	SABS 1864. Blockade of Charleston. Decomm 24 Jan 1866. Sold 16 Mar 1866.
<i>Jean Sands</i>	Brooklyn, NY	1864	139 tons	102 ft. x 22 ft. 8 in. x d 6 ft. 2 in.	1 screw, vertical inverted engine	Salvage tug. Service Record: Norfolk, Navy Yard, tug and salvage vessel 1864-1892. She was purchased as a steam tug, with apparatus, etc., for pumping out sunken vessels. Sold 16 May 1892.

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Emerald</i>	Philadelphia., PA	1864	50 tons	58 ft. x 14 ft. x d 6 ft.	1 screw; 12.5 knots	Yacht. Not commissioned. Service Record: Ferry at Portsmouth (NH) Navy Yard 1864-1883. Sold 1883.
<i>Maria</i>	NY	1865	170 tons	U	1 screw	Delivered, 11 Aug 1865, at New York Navy Yard. Sunk, 4 Jan 1870, off Marthas Vineyard, by USS <i>Miantonomah</i> .
<i>Unit</i>	Philadelphia, PA	1865	56 tons	62 ft. 2 in. x 15 ft. 2 in. x 8 ft.	1 screw, HP engine; 7.5 knots	NABS 1864. Hampton Roads. Sold 12 July 1865.
<i>Fortune</i>	Boston, MA	1865	378 tons	137 ft. x 26 ft. x 8 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Various duties on East coast 1871-1891. Converted to spar torpedo boat 1871. Gunnery training 1899-1901. Submarine tender Mare Island 1903-1912. Station ship, Samoa 1915-1922. Sold 22 May 1922. Iron hull. Also had schooner rig.
<i>Leyden</i>	Chelsea, MA	1865	U	137 ft. x 26 ft. x 9 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Navy yard tug at Boston, MA 1866-1879. Portsmouth 1879-1897 and Newport 1897. Served off Cuba 1898. Foundered in fog off Block Island, 21 Jan 1903. Iron hull.
<i>Nina</i>	Chester, PA	1865	350 tons	137 ft. x 26 ft. x 9 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Built by contract with Reaney, Son & Archbold. Delivered at New York Navy Yard, 26 Sep 1865. Yard tug, Washington Navy Yard 1866-1871. Yard tug 1883. Submarine tender 1903-1910. Missing in gale on voyage from Norfolk to Boston, 6 Feb 1910.
<i>Triana</i>	Williamsburg, NY	1865	350 tons	137 ft. x 26 ft. x 9 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Yard tug Washington 1867. Converted to spar torpedo boat 1871. Stricken 13 Apr 1891. Sold 2 May 1891.
<i>Beaufort</i>	U	1865	80 tons	85 ft. x 17 ft. 5 in. x d 6 ft. 11 in.	1 screw, vertical, direct-acting engine (22 in. x 22 in.)	Captured at Richmond, VA May 1865 and sent to Norfolk. No service; 2 Sep 1865, ordered to Washington for sale.
<i>Mayflower</i>	Boston, MA	1866	350 tons	137 ft. x 26 ft. x 9 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Built by contract with James Tetlow. Iron hull. Survey Expedition to Tehuantepec, Mexico, 1870. Despatch boat, Portsmouth 1872. Training ship, Annapolis 1876. Stricken 23 Sep 1892. Sold 27 Dec 1893.
<i>Palos</i>	Chelsea, MA	1866	350 tons	137 ft. x 26 ft. x 9 ft. 6 in.	1 screw, vertical compound engines; 10 knots	Built under contract with James Tetlow. Iron hull. Yard tug, Boston 1866-1869. First United States Naval vessel to run on oil fuel, May-Jun 1867. Converted to gunboat 1870. First USN ship to transit Suez Canal, Aug 1870. Asiatic Station 1871-1893. Fired upon Korean fort, 1 Jun 1871. Korean Expedition 1871. Decomm Jul 1892. Sold at Nagasaki, Japan in Jan 1893.
<i>Young America</i>	NY		173 tons	87 ft. 1 in. x 20 ft. 2 in. x 10 ft. 6 in.	1 screw	Confederate tug captured in Hampton Roads by USS <i>Cumberland</i> , 24 Apr 1861. Potomac Flotilla 1861-1862. Decomm 9 Jun 1865. Sold 12 Jul 1865.
<i>Blue Light</i>	U		U	U	U	Powder tug. Sold 27 Sep 1883.

Name	Bldr	Year	Tonnage	Dimensions	Machinery	Notes & Service Record
<i>Port Fire</i>	Portsmouth, NH		U	U	U	Powder tug.
<p>Table information compiled by author based on specifications listed in <i>Warships of the Civil War Navies</i> and <i>Official Records of the Union and Confederate Navies in the War of the Rebellion</i>. Abbreviations are as follows: Name = name of tugboat; Bldr = location of construction; Year = year of completion; Tonnage = tons burden; Dimensions = length x beam x draft, unless a d is depicted, which will stand for depth of hull; Machinery = screw versus sidewheeler; Notes &amp; Service Record = brief service record; U = Unknown; NABS = North Atlantic Blockading Squadron; SABS = South Atlantic Blockading Squadron; EGBS = East Gulf Blockading Squadron; WGBS = West Gulf Blockading Squadron.</p>						

Appendix B

Howard B. Tower Jr., Personal Communication Permission Form



**Nicole Tumbleson Morris**

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**From:** Howard Tower <htower@windstream.net>  
**Sent:** Thursday, February 03, 2011 1:36 PM  
**To:** nicole@seasmarinearch.com  
**Cc:** Howard Tower  
**Subject:** Publishing Material - USS Narcissus

Nicole:

This email references our telephone conversation today (2/3/11).

You have my permission to use any, and all, material, some of which may not be, in the public domain, that I have provided you for your thesis concerning the USS Narcissus. You may also reference notes of our conversations concerning this vessel, but only about the Narcissus.

Howard B. Tower Jr.  
386.330.0210 (ofc)

## Appendix C

List of Artifacts Recovered from USS *Narcissus* between 1983 and 1988

ATTACHMENT B - 1983 ITEMS RECOVERED

\*IN MR. LEER'S POSSESSION

- \*01. BRASS SPIKE, 5" x 5/16" SQ
- \*02. BRASS SPIKE, 5" x 5/16" SQ
- \*03. BRASS SPIKE, 5" x 5/16" SQ
- 04. BRASS SPIKE, 5" x 5/16" SQ
- 05. BRASS SPIKE, 5" x 5/16" SQ
- 06. BRASS SPIKE, 5" x 5/16" SQ
- \*07. CRUSHED OIL CAN BRASS 3½" DIA.
- \*08. COPPER RIVET 10" x 3/4"
- \*09. BRASS WASHER, 1½" O.D. 13/16 I.D.
- \*10. WOOD BARREL HANDLE, 4" x 3/4"
- \*11. TEE HANDLE KEG SPIGOT BRASS, 3" x ½" TAPER
- \*12. LAMP HOOP, BRASS, 7" x 1/8"
- \*13. BRASS TACK, ROUND 1" LONG WITH SQUARED TIP
- \*14. BRASS TACK, ROUND 1" LONG WITH SQUARED TIP
- \*15. C.S. BELT BUCKLE CAST BRASS
- \*16. 5" x 8" MUNZ METAL SHEET
- \*17. WOOD TRUNION, 1" x 7"
- 18. SILVER FORK - 4 PRONG DECORATIVE HANDLE WITH "LANDIS" AT TOP
- 19. MINI BALL 5/8" x 3/4"
- 20. MINI BALL, 5/8" x 3/4"
- 21. BAROMETER - THERMOMETER FACE, BRASS
- 22. OIL CAN, BRASS 3½" DIA x 3" HIGH
- 23. OIL LAMP, BRASS 3½" DIA x 3" HIGH WITH HANDLE
- 24. OIL LAMP MANTLE - BRASS
- 25. 3 LB. CANNON BALL, 3" DIA.
- \*26. BRASS KEY, 3½" LONG
- 27. BRASS KEY, 3½" LONG
- 28. BRASS KEY
- 29. PERCUSSION RIFLE BREACH WITH BRASS TRIGGER GUARD
- 30. BRASS FITTED SCABOARD, 12" x 1½"
- 31. STEEL FITTED SCABOARD, 14" x 1½"
- 32. BAYONET
- 33. HANDCUFFS
- 34. ANKLE MANACLES WITH KEY STILL IN LOCK
- 35. PLATE SHARD WHITE GLAZED 4" x 2"
- 36. RIGHT SHOE SOLE 3" WIDE x 5" LONG
- 37. GLASS INK WELL
- 38. COAT HOOK - BRASS 3½"
- 39. BRONZE ENGINE ROOM BELL
- 40. BRASS BELL KNOCKER WITH RUBBER CLACKER

ATTACHMENT C - 1987-8 ITEMS RECOVERED

01. FIRE BOX DOOR FRAME, 42 3/8" x 32"
02. PIECE OF CAST IRON PIPE, 7" x 4"
03. STEEL ROD, 5 1/2" x 5/8", SLIGHTLY BENT
04. SQUARE STEEL ROD, 5/16" x 8", BENT 100°
05. CAST IRON PIPE ELL - 1 3/4" PIPE THREAD
06. STEEL ROD SQUARE - 1" SQUARE x 12" LONG
07. EXTENSION OF #4 - 5" x 5/16 SQUARE
08. STEEL SPIKE, 5 5/8 x 1/2" SQUARE WITH 8Q HEAD
09. STEEL BOLT, 2 11/16 x 5/8 SQUARE HEADED STEEL BOLT
10. STEEL BOLT, 2 7/16 x 5/8 SQUARE HEADED STEEL BOLT
11. STEEL BOLT, 2 x 5/8 SQUARE HEADED STEEL BOLT
12. STEEL BOLT, 2 5/16 x 5/8 SQUARE HEADED STEEL BOLT
13. PIECE OF VALVE INSULATION, 3 7/8 x 3 1/2
14. RUBBER IMPREG CLOTH FLANGE GASKET, 3 3/8 I.D. x 6 7/8 O.D.  
(FLANGE GASKET WITH FOUR HOLES 3/4")
15. RUBBER IMPREG CLOTH FLANGE GASKET, 3 3/8 I.D. x 6 7/8 O.D.
16. MUNZ METAL SHEET, 5" x 8"
17. CLOTH INSULATION, 8 3/4" x 2 1/2"
18. WOOD (WORM EATEN), 3 3/4" x 1 5/8" x 3/4"
19. WOOD (WORM EATEN), 2 1/2" x 1 1/2" x 3/4"
20. STEEL RIVET HEAD, 2" x 3/4"
21. STEEL RIVET HEAD, 2" x 3/4"
22. STEEL RIVET HEAD, 2" x 3/4"
23. STEEL BAR, 3/4" SQ x 14" L
24. STEEL PIPE, 22 3/8" x 2" O.D.
25. MUNZ METAL SHEET, 12 x 14 3/4 WITH 22 3/16 HOLES
26. BENT COPPER WIRE, 3/16" x 24"
27. SOLID BRASS VALVE HANDLE, 7 1/2" DIA x 1 1/8 TK
28. CRUSHED BRASS CAN, 2 1/2 H x 3 1/2 D.
29. BRASS TAPER SEAL VALVE WITH 1 1/4" PIPE THREAD
30. BRASS GATE VALVE WITH 1" INTERNAL PIPE THREAD
31. BRASS LAMP HOOD, 7" DIA.
32. BRONZE LAG BOLT 3 3/16" x 5/8" WITH 1 1/16" HEX HEAD
33. 32" COPPER PIPE WITH WELDED SEAM AND TEE SOLDERED 4" FROM END
34. 18 BRASS TACKS, 1" LONG WITH SQUARED POINTS
35. 3 1/8 x 5/8" BRASS SPIKE PIECE
36. 1 11/16 x 5/16 BRASS SPIKE PIECE
37. 4 SECTIONS STEEL ROD RIGGING WITH EYES 36" LONG
38. VALVE INSULATION 3 7/8 x 4"
39. TAPER SEAL BRASS FLANGE VALVE, 3 1/2" I.D.
40. TAPER SEAL BRASS FLANGE VALVE, 3 1/2" I.D.
41. WOOD TRUNION
42. VALVE INSULATION 3 7/8 x 2 1/2
43. STEEL PLATE
44. GLASS SHARD WITH GREEN TINTING

Appendix D

The Florida Aquarium Copyright Permission Letter

Melissa Nicole Tumbleson Morris  
3415 1st Street South  
Jacksonville Beach, FL 32250

20 September 2011

Tom Wagner  
PR Manager  
The Florida Aquarium  
701 Channelside Drive  
Tampa, FL 33602

Dear Tom

I am completing a master's thesis at The University of West of Florida on the USS *Narcissus*. I am writing to request your permission to reprint the following material in my thesis:

1) Specific photographs and remote sensing images contained in the following three reports:

Morris III, John W., Gordon P. Watts, Jr., Casey Coy, and Michael Terrell  
2007 Tampa Bay Historical Shipwreck Survey Final Report. Prepared for the Bureau of Historic Preservation, Florida Division of Historical Resources, Florida Department of State, Tallahassee, Florida.

Morris III, John W., Gordon P. Watts, Jr., Casey Coy, and Michael Terrell  
2008 Tampa Bay Historical Shipwreck Survey Final Report. Prepared for the Bureau of Historic Preservation, Florida Division of Historical Resources, Florida Department of State, Tallahassee, Florida.

Morris III, John W., Gordon P. Watts, Jr., Casey Coy, Michael Terrell, and Nicole Tumbleson  
2010 Tampa Bay Historical Shipwreck Survey Final Report. Prepared for the Bureau of Historic Preservation, Florida Division of Historical Resources, Florida Department of State, Tallahassee, Florida.

2) Unpublished photographs taken by The Florida Aquarium personnel during the course of the Tampa Bay Historical Shipwreck Survey.

A print copy of my thesis will be archived in the John C. Pace Library at The University of West Florida in Pensacola. An electronic version will be archived at the Florida Center for Library Automation (FCLA). The requested permission extends to any future revisions and editions of my thesis including non-exclusive world rights in all languages. These rights will in no way restrict republication of the material in any other form by you

or others authorized by you. Your signing of this letter will confirm that you own [or your company owns] the copyright to the above-described material.

Thank you for your attention in this matter.

Sincerely,

Melissa Nicole Tumbleson Morris

PERMISSION GRANTED FOR THE USE AS REQUESTED ABOVE:

By:  \_\_\_\_\_

Tom Wagner

Date: 9/21/11 \_\_\_\_\_

Appendix E

John W. Morris III Copyright Permission Letter



Melissa Nicole Tumbleson Morris  
3415 1st Street South  
Jacksonville Beach, FL 32250

20 September 2011

John W. Morris III  
3415 1st Street South  
Jacksonville Beach, FL 32250

Dear Mr. Morris:

I am completing a master's thesis at The University of West of Florida entitled "USS *Narcissus*: The Role of the Tugboat in the American Civil War." I am writing to request your permission to reprint the following material in my thesis:

1) Unpublished drawings of the site plan, engine, and stern assembly of the USS *Narcissus*:

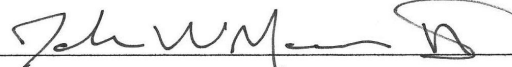
A print copy of my thesis will be archived in the John C. Pace Library at The University of West Florida in Pensacola. An electronic version will be archived at the Florida Center for Library Automation (FCLA). The requested permission extends to any future revisions and editions of my thesis including non-exclusive world rights in all languages. These rights will in no way restrict republication of the material in any other form by you or others authorized by you. Your signing of this letter will confirm that you own [or your company owns] the copyright to the above-described material.

Thank you for your attention in this matter.

Sincerely,

Melissa Nicole Tumbleson Morris

PERMISSION GRANTED FOR THE USE AS REQUESTED ABOVE:

By: 

John W. Morris III

Date: 10/7/2011